

FCC ID TEST REPORT

Under

FCC 15 Subpart C, Paragraph 15.247

Operation within the bands 902- 928 MHz, 2400 -2483.5 MHz, and 5725 - 5850 MHz

☒DTS - Digital Transmission System

Prepared For :

Moochies Technologies LTD

159 Wardour Street, London, W1F 8WH, UK

FCC ID: 2AW9Z-MW12
EUT: Kids 4G Smartwatch Phone
Model: MW12

July 17, 2020 Issue Date:
Original Report Report Type:
 Test Engineer: Jacky Huang
 Review By: Apollo Liu / Manager

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Report Revision History

Report #	Version	Description	Issued Date
KSZ2020032301J06	Rev.01	Initial issue of report	July 17, 2020

1. General Information

1.1 Notes

The test results of this report relate exclusively to the test item specified in 1.5. The KMO Lab does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the KMO Lab.

1.2 Testing Laboratory

Test Firm Name:	Ke Mei Ou Lab Co., Ltd.
Test Firm Address:	2013-2016, 20th Floor, Business Center, Jiahui Xin Cheng, No 3027, Shen Nan Road, Fu Tian, Shen Zhen, Guang Dong, P. R. China
FCC Designation Number:	CN1532
Test Firm Registration Number:	344480
Internet:	www.kmolab.com
Email:	kmo@kmolab.com
ANSI-ASQ National Accreditation Board/ACLASS ISO/IEC 17025 Accredited Lab for telecommunication standards. The Registration Number is AT-1532. The testing quality system meets with ISO/IEC-17025 requirements, This approval results is accepted by MRA of ILAC.	

1.3 Details of Applicant

Name	Moochies Technologies LTD
Address	159 Wardour Street, London, W1F 8WH, UK

1.4 Application Details

Date of Receipt of Application	: March 23, 2020
Date of Receipt of Test Item	: May 11, 2020
Date of Test	: May 11 ~ July 17, 2020

1.5 Details of Manufacturer

Name	Moochies Technologies LTD
Address	159 Wardour Street, London, W1F 8WH, UK

1.6 Test Item

EUT Feature	
EUT Description:	Kids 4G Smartwatch Phone
Brand Name:	Moochies
Model Name:	MW12
EUT RF Technology:	☒ WLAN 2.4GHz 802.11b/g/n HT/20/40
HW Version:	G4H-MB
SW Version:	G4P EMMC 240 5M COMMON OVERSEA 20190919 17.19.00
EUT Stage:	☒ Identical Prototype ☐ Production
Note: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.	

Additional Information

Standard Product Specification				
Tx/Rx Frequency Range	☒ 2412~2462 MHz		☐ 2412~2472 MHz	
Number of Channels	☒ 11		☐ 13	
Antenna Type / Gain	Internal PCB Antenna / gain 1.2 dBi			
Type of Modulation	802.11b: DSSS (DBPSK / DQPSK / CCK) 802.11g/n: OFDM (BPSK / QPSK / 16QAM / 64 QAM)			
Antenna Function for Transmitter	802.11 b/g/n SISO ☒ Ant. 1 ☐ Ant. 2 802.11n MIMO ☐ Ant. 1 ☐ Ant. 2			
EUT Operational Condition	☐ AC			
	☒ DC → ☒ From Battery → ☐ External AC adapter ☐ POE			
	☒ Li-ion battery			
Specification of Accessory				
☒ Li-ion Battery	Brand Name	N/A	Model Name	663032V
	Power Rating	3.7V, 700mAh, 2.59Wh		

1. 7 Applicable Standards

Applicable Standards
According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards: FCC Part 15 Subpart C 15.247 FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v05r02 FCC KDB 414788 D01 Radiated Test Site v01r01 ANSI C63.10-2013
Note: 1) All test items were verified and recorded according to the standards and without any deviation during the test. 2) This EUT has also been tested and complied with the requirements of FCC 15 Part 15, Subpart B, recorded in a separate test report.

2. Technical Test

2.1 Summary of Test Results

The EUT has been tested according to the following specifications:

FCC Rules	Test Type	Limit	Result	Notes
15.247(a)(2)	6dB Bandwidth	$\geq 0.5\text{MHz}$	PASS	Complies.
-	99% Bandwidth	-	PASS	Complies.
15.247(b)(3)	Peak Output Power	$\leq 30\text{dBm}$	PASS	Complies.
15.247(e)	Power Spectral Density	$\leq 8\text{dBm}/3\text{kHz}$	PASS	Complies.
15.247(d)	Conducted Band Edges and Spurious Emission	$\leq 20\text{dBc}$	PASS	Complies.
15.247(d)	Radiated Band Edges and Spurious Emission	FCC 15.209(a) & 15.247(d)	PASS	Complies
15.247(d)	Conducted Band Edges and Spurious Emission	$\leq 20\text{dBc}$	PASS	Complies
15.207	AC Conducted Emission	FCC15.207(a)	PASS	Complies
15.203 & 15.247(b)	Antenna Requirement	N/A	PASS	Complies
15.247(i) & 1.1307(b)(1) & 2.1091	Maximum Permissible Exposure (MPE)	$< 1\text{mW}/\text{cm}^2$	PASS	Complies

2.2 Antenna Requirement

A. Regulation

FCC section 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 Part 15C. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

B. Result

The EUT has one internal PCB antenna, which was permanently attached and the gain is 1.2 dBi, Therefore the EUT complies with Section 15.203 of the FCC rules.

2.3 Measurement Uncertainty

Measurement	Frequency	Uncertainty
Conducted emissions	0.15MHz~30MHz	1.72
Radiated emissions	30MHz ~ 300MHz	3.88
Radiated emissions	300MHz ~ 1000MHz	3.86
Radiated emissions	>1000MHz	4.42
6 dB & 99% Bandwidth	-	5%
Peak Power	-	1.10
Peak Power Spectral Density	-	1.10
Band Edges Measurement	-	1.10

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

3. EUT Modifications

No modification by test lab.

4. Conducted Power Line Test

4. 1 Test Equipment

Please refer to Section 10 this report.

4. 2 Test Procedure

Test Method	
☒	The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission., the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement. Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

4. 3 Test Setup

Test Setup	
AC Line Conducted Emissions	
The diagram illustrates the test setup for AC Line Conducted Emissions within a shielded room. A red box labeled 'PC+ EUT' is placed on a stand, positioned 0.4m from the left wall and 0.8m above the floor. A blue line connects the EUT to a red box labeled 'LISN' on the floor. A blue line also connects the LISN to a spectrum analyzer on the right. The floor is labeled 'Metal Ground'.	
This test is applicable for radio equipment and/or ancillary equipment for fixed use powered by the AC mains. This test shall be performed on a representative configuration of the radio equipment, the associated ancillary equipment, or a representative configuration of the combination of radio and ancillary equipment. This test assesses the level of internally generated electrical noise present on the AC power input/output ports.	

4. 4 Configuration of the EUT

WLAN Test Mode

Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates as below table.

SISO Antenna	
Modulation	Data Rate
802.11b	1 Mbps
802.11g	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0

Summary Tables of Test Mode	
AC Conducted Emission	EUT is power by battery only.

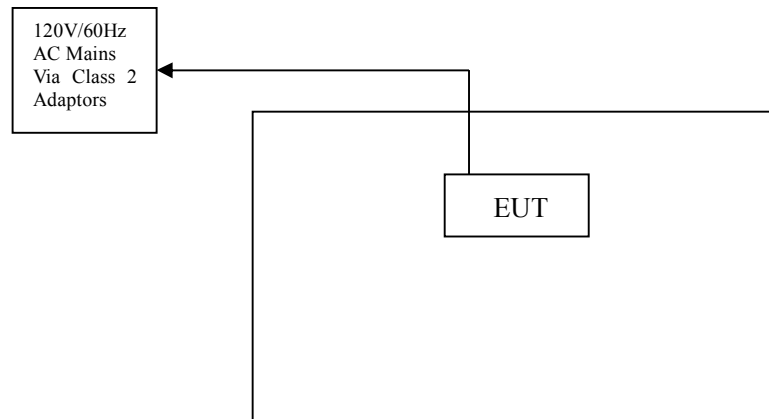
EUT Operation Test Setup			
Pre-Scan has been conducted to determine the worst-case mode from all possible combinations. Only the worst test mode data was reported.			
For WLAN function, the engineering test program was provided and enabled to make EUT connect with WLAN base station to continuous transmit/receive.			
Test Item	Modulation Mode	CH. Freq. (MHz)	Data Rate / MCS
RF Output Power Power Spectral Density	11b	2412 / 2442 / 2462	1 Mbps
	11g	2412 / 2442 / 2462	6 Mbps
	HT20	2412 / 2442 / 2462	MCS 0
	HT40	2422 / 2442 / 2452	MCS 0
Occupied Channel Bandwidth Transmitter unwanted emission in the out of band domain	11b	2412 / 2442 / 2462	1 Mbps
	11g	2412 / 2442 / 2462	6 Mbps
	HT20	2412 / 2442 / 2462	MCS 0
	HT40	2422 / 2442 / 2452	MCS 0
Transmitter Spurious Emissions under 1 GHz	11b	2412 / 2462	1 Mbps
	11g	2412 / 2462	6 Mbps
	HT20	2412 / 2462	MCS 0
	HT40	2422 / 2452	MCS 0
Transmitter Spurious Emissions above 1 GHz	11b	2412 / 2462	1 Mbps
	11g	2412 / 2462	6 Mbps
	HT20	2412 / 2462	MCS 0
	HT40	2422 / 2452	MCS 0
Receiver Spurious Emissions	11b	2412 / 2462	1 Mbps
	11g	2412 / 2462	6 Mbps
	HT20	2412 / 2462	MCS 0
	HT40	2422 / 2452	MCS 0
Adaptivity	11b	2412 / 2462	1 Mbps
	11g	2412 / 2462	6 Mbps
	HT20	2412 / 2462	MCS 0
	HT40	2422 / 2452	MCS 0
Receiver Blocking	11b	2412 / 2462	1 Mbps
	11g	2412 / 2462	6 Mbps
	HT20	2412 / 2462	MCS 0
	HT40	2422 / 2452	MCS 0
Note: The test modes were carried out for all operation modes (include link and idle).			
The final test mode of the EUT was the worst test mode for Mode 1, and its test data was reported.			

Support Unit				
Device	Manufacturer	Model # Serial #	FCC ID/ DoC	Cable
Notebook	LENOVO	20195	DoC	1.5m unshielded power cord
-	-	-	-	-

4. 5 EUT Operating Condition

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

- A. Setup the EUT and simulators as shown on follow.
- B. Enable RF signal and confirm EUT active.
- c. Modulate output capacity of EUT up to specification.



4. 6 Conducted Power Line Emission Limits

FCC Part 15 Paragraph 15.207 (dBuV)	
Frequency Range (MHz)	QP/AV
0.15 – 0.5	66-56/56-46
0.5 – 5.0	56/46
5.0 - 30	60/50

Note: In the above table, the tighter limit applies at the band edges.

4. 7 Conducted Power Line Test Result

The EUT is power by battery only.

5. FCC Part 15.247 Requirements for 802.11b/g/n Systems

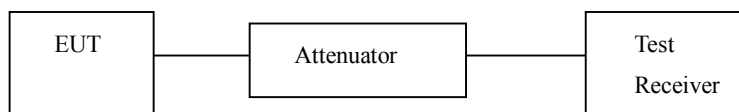
5.1 Test Equipment

Please refer to Section 10 this report.

5.2 Test Procedure

6 dB & 99% Bandwidth	Refer to FCC 15.247(a)(2), ANSI C63.10:2013
Test Method:	FCC KDB Publication No.558074 D01 DTS Meas Guidance v05r02 – 8.2
a) Set RBW = 100 kHz. b) Set the video bandwidth (VBW) $\geq 3 \times$ RBW. c) Detector = Peak. d) Trace mode = max hold. e) Sweep = auto couple. f) Allow the trace to stabilize.	g) 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. *For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 30kHz and set the Video bandwidth (VBW) = 100kHz.
Peak Power:	Refer to FCC 15.247(b)(3), ANSI C63.10:2013
Test Method:	FCC KDB Publication No.558074 D01 DTS Meas Guidance v05r02 – 8.3 PKPM1 Peak power meter method
The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.	
Peak Power Spectral Density:	Refer to FCC 15.247(e), ANSI C63.10:2013
Test Method:	FCC KDB Publication No.558074 D01 DTS Meas Guidance v05r02 – 8.4 Method PKPSD
a) Set analyzer center frequency to DTS channel center frequency. b) Set the span to 1.5 times the DTS bandwidth. c) Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$. d) Set the VBW $\geq 3 \times$ RBW. e) Detector = peak. f) Sweep time = auto couple.	g) Trace mode = max hold. h) Allow trace to fully stabilize. i) Use the peak marker function to determine the maximum amplitude level within the RBW. j) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.
Band Edges Measurement:	Refer to FCC 15.247(d), ANSI C63.10:2013
Test Method:	FCC KDB Publication No.558074 D01 DTS Meas Guidance v05r02 & 15.247
a. The transmitter output was connected to the spectrum analyzer via a low lose cable. b. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100kHz bandwidth from band edge. c. The band edges was measured and recorded.	

5.3 Test Setup



5.4 Configuration of the EUT

Same as section 4.4 of this report

5.5 EUT Operating Condition

Same as section 4.5 of this report.

5.6 Limit

According to §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 6dB bandwidth shall be at least 500 kHz.

According to §15.247(b)(3), for systems using digital modulation in the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz: 1 Watt.

According to §15.247(b)(4), the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum 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. 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 Section 15.205(c)).

According to §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.

According to §15.247(f), the digital modulation operation of the hybrid system, with the frequency hopping turned off, shall comply with the power density requirements of paragraph (d) of this section.

5. 7 Test Result

A. 6 dB Bandwidth

Refer to Appendix_DTS_WiFi

B. Peak Power

Refer to Appendix_DTS_WiFi

C. Band Edges Measurement

Refer to Appendix_DTS_WiFi

D. Peak Power Spectral Density

Refer to Appendix_DTS_WiFi

6. Transmitter Spurious Radiated Emission at 3 Meters

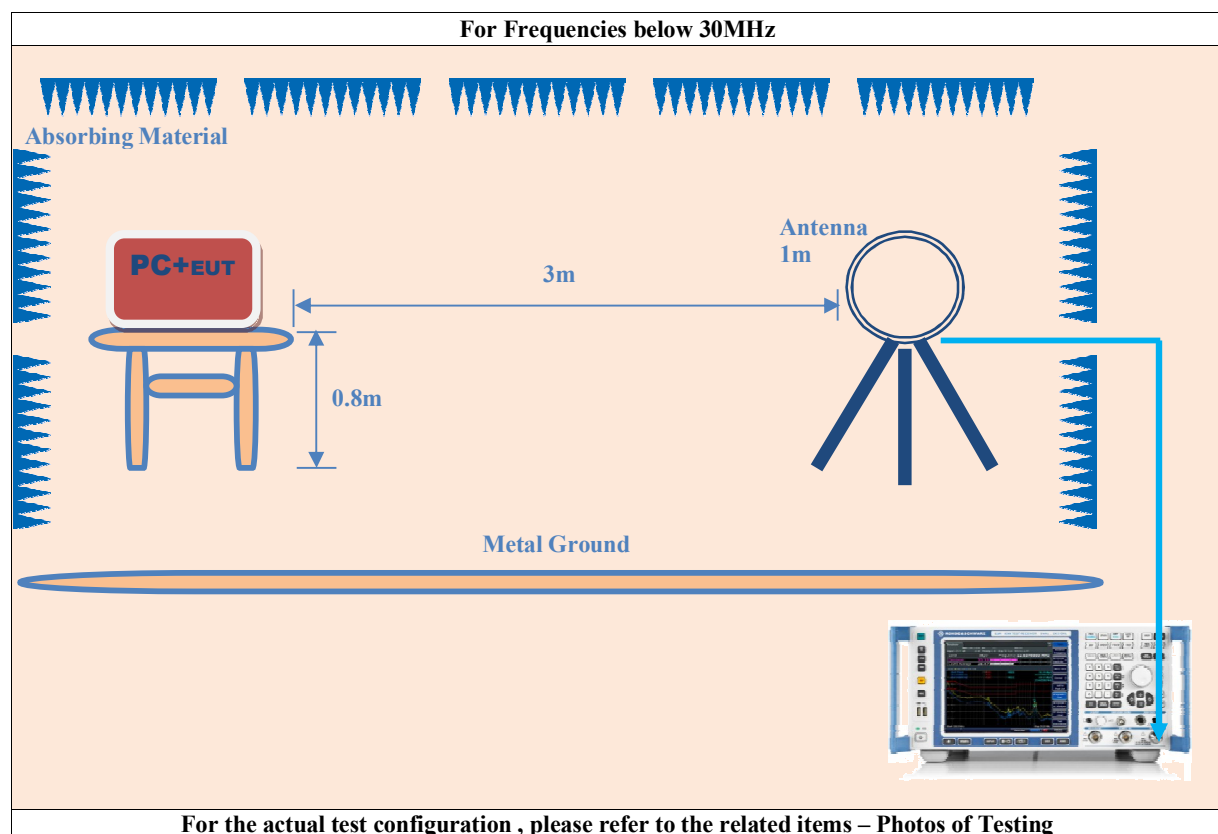
6.1 Test Equipment

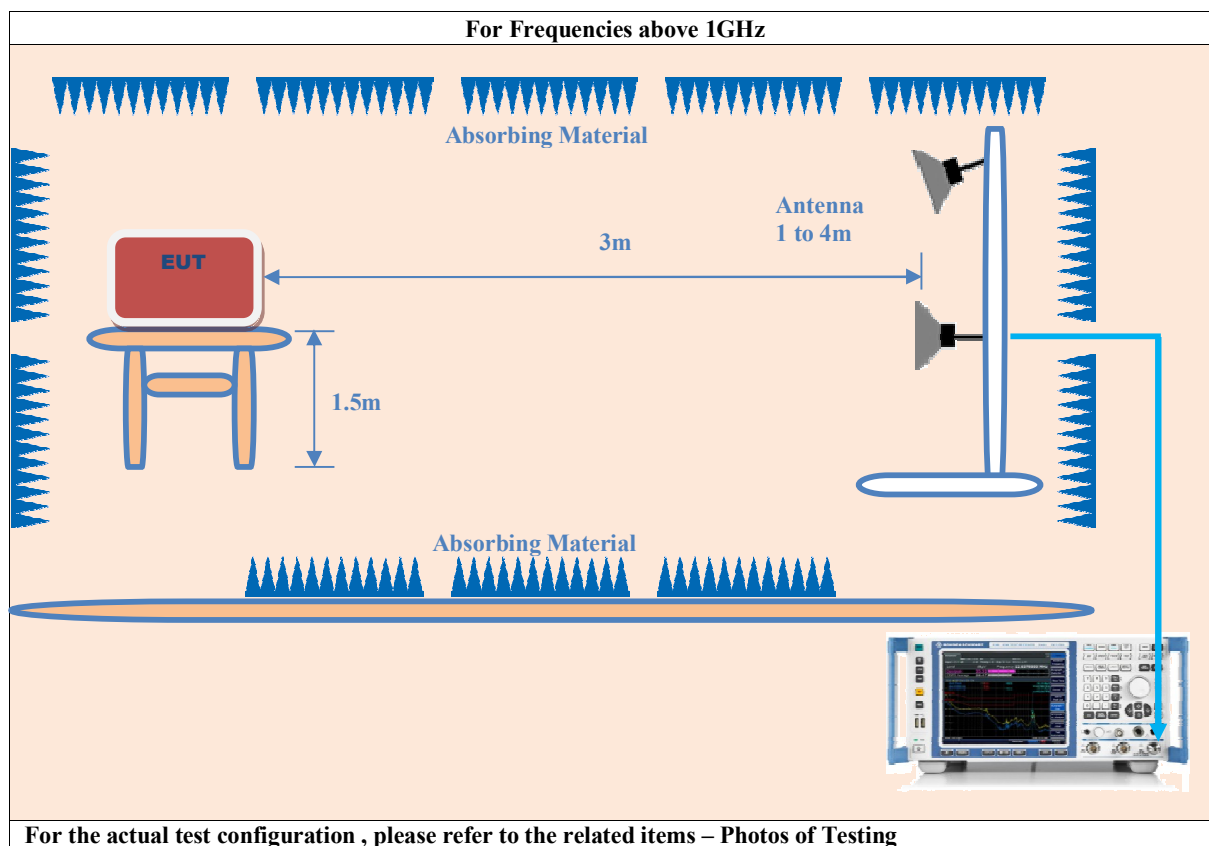
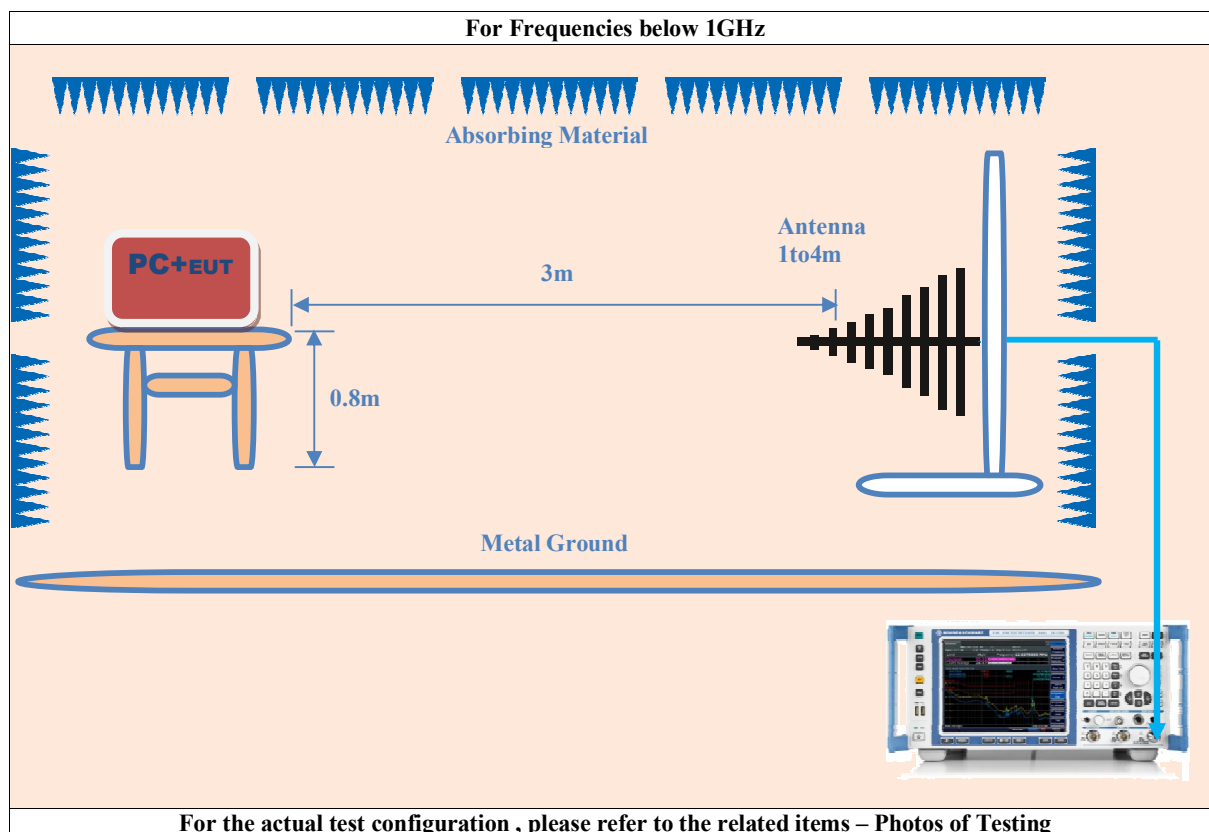
Please refer to Section 10 this report.

6.2 Test Procedure

1. The EUT was tested according to ANSI C63.10:2013.
2. The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m, and which is 1.5 m high for above 1 GHz. All set up is according to ANSI C63.10:2013 .
3. The frequency spectrum from 9 kHz to 25 GHz was investigated. All readings from 9 kHz to 150 kHz are quasi-peak values with a resolution bandwidth of 200 Hz. All readings from 150 kHz to 30 MHz are quasi-peak values with a resolution bandwidth of 9 KHz. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 KHz. Measurements were made at 3 meters.
4. The emissions from the EUT were measured continuously at every azimuth by rotating the turntable. The Receiving antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency. Emissions below 30MHz were measured with a loop antenna while emission above 30MHz were measured using a broadband E-field antenna.
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. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this transmitter(EUT) was rotated through three orthogonal axes according to the requirements in Section 8 and 13 of ANSI C63.10:2013

6.3 Test Setup





6.4 Configuration of the EUT

Same as section 4.4 of this report

6.5 EUT Operating Condition

Same as section 4.5 of this report.

6.6 Limit

In any 100 KHz bandwidth outside the operating frequency band, the radio frequency power that is produced by modulation products of the spreading sequence, the information sequence and the carrier frequency shall be either at least 20 dB below that in any 100 KHz bandwidth within the band that contains the highest level of the desired power or shall not exceed the general levels specified in section 15.209(a), which lesser attenuation.

All other emissions inside restricted bands specified in section 15.205(a) shall not exceed the general radiated emission limits specified in section 15.209(a)

Note:

Applies to harmonics/spurious emissions that fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

47 CFR § 15.237(c): The emission limits as specified above are based on measurement instrument employing an average detector. The provisions in section 15.35 for limiting peak emissions apply.

FCC CFR 47, Part 15, Subpart C, Para. 15.205(a) – Restricted Frequency Bands

MHz	MHz	MHz	GHz
0.090–0.110.....	16.42–16.423	399.9–410	4.5–5.15
0.495–0.505.....	16.69475–16.69525	608–614	5.35–5.46
2.1735–2.1905.....	16.80425–16.80475	960–1240	7.25–7.75
4.125–4.128.....	25.5–25.67	1300–1427	8.025–8.5
4.17725–4.17775.....	37.5–38.25	1435–1626.5	9.0–9.2
4.20725–4.20775.....	73–74.6	1645.5–1646.5	9.3–9.5
6.215–6.218.....	74.8–75.2	1660–1710	10.6–12.7
6.26775–6.26825.....	108–121.94	1718.8–1722.2	13.25–13.4
6.31175–6.31225.....	123–138	2200–2300	14.47–14.5
8.291–8.294.....	149.9–150.05	2310–2390	15.35–16.2
8.362–8.366.....	156.52475–156.52525	2483.5–2500	17.7–21.4
8.37625–8.38675.....	156.7–156.9	2690–2900	22.01–23.12
8.41425–8.41475.....	162.0125–167.17	3260–3267	23.6–24.0
12.29–12.293.....	167.72–173.2	3332–3339	31.2–31.8
12.51975–12.52025.....	240–285	3345.8–3358	36.43–36.5
12.57675–12.57725.....	322–335.4	3600–4400	(²)
13.36–13.41.....			

¹Until February 1, 1999, this restricted band shall be 0.490–0.510 MHz.

²Above 38.6

FCC 47 CFR, Part 15.209(a) – Field Strength Limits within Restricted Frequency Bands

Frequency(MHz)	Field strength (microvolts/meter)	Measure- ment dis- tance (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

6. 7 Test Result

Restricted Frequency Bands Data_802.11b_CH Low										
Frequency (MHz)	Read Level (dBuV)		Factor (dB)	Emission (dBuV/m)		Horiz./ Vert.	Limit (dBuV/m)		Margin(dB)	
	PK	AV		PK	AV		PK	AV	PK	AV
2390.000	53.03	41.14	0.90	53.93	42.04	Horiz./	74.0	54.0	-20.07	-11.96
2390.000	53.31	41.61	0.90	54.21	42.51	Vert.	74.0	54.0	-19.79	-11.49
Restricted Frequency Bands Data_802.11b_CH High										
Frequency (MHz)	Read Level (dBuV)		Factor (dB)	Emission (dBuV/m)		Horiz./ Vert.	Limit (dBuV/m)		Margin(dB)	
	PK	AV		PK	AV		PK	AV	PK	AV
2483.500	52.79	40.48	0.90	53.69	41.38	Horiz./	74.0	54.0	-20.31	-12.62
2483.500	53.72	41.27	0.90	54.62	42.17	Vert.	74.0	54.0	-19.38	-11.83
Restricted Frequency Bands Data_802.11g_CH Low										
Frequency (MHz)	Read Level (dBuV)		Factor (dB)	Emission (dBuV/m)		Horiz./ Vert.	Limit (dBuV/m)		Margin(dB)	
	PK	AV		PK	AV		PK	AV	PK	AV
2390.000	54.86	43.77	0.90	55.76	44.67	Horiz./	74.0	54.0	-18.24	-9.33
2390.000	57.75	45.03	0.90	58.65	45.93	Vert.	74.0	54.0	-15.35	-8.07
Restricted Frequency Bands Data_802.11g_CH High										
Frequency (MHz)	Read Level (dBuV)		Factor (dB)	Emission (dBuV/m)		Horiz./ Vert.	Limit (dBuV/m)		Margin(dB)	
	PK	AV		PK	AV		PK	AV	PK	AV
2483.500	55.01	42.74	0.90	55.91	43.64	Horiz./	74.0	54.0	-18.09	-10.36
2483.500	58.76	45.02	0.90	59.66	45.92	Vert.	74.0	54.0	-14.34	-8.08
Restricted Frequency Bands Data_802.11n HT20_CH Low										
Frequency (MHz)	Read Level (dBuV)		Factor (dB)	Emission (dBuV/m)		Horiz./ Vert.	Limit (dBuV/m)		Margin(dB)	
	PK	AV		PK	AV		PK	AV	PK	AV
2390.000	56.78	43.45	0.90	57.68	44.35	Horiz./	74.0	54.0	-16.32	-9.65
2390.000	57.72	45.23	0.90	58.62	46.13	Vert.	74.0	54.0	-15.38	-7.87
Restricted Frequency Bands Data_802.11n HT20_CH High										
Frequency (MHz)	Read Level (dBuV)		Factor (dB)	Emission (dBuV/m)		Horiz./ Vert.	Limit (dBuV/m)		Margin(dB)	
	PK	AV		PK	AV		PK	AV	PK	AV
2483.500	61.25	43.56	0.90	62.15	44.46	Horiz./	74.0	54.0	-11.85	-9.54
2483.500	61.97	44.89	0.90	62.87	45.79	Vert.	74.0	54.0	-11.13	-8.21
Restricted Frequency Bands Data_802.11n HT40_CH Low										
Frequency (MHz)	Read Level (dBuV)		Factor (dB)	Emission (dBuV/m)		Horiz./ Vert.	Limit (dBuV/m)		Margin(dB)	
	PK	AV		PK	AV		PK	AV	PK	AV
2390.000	57.71	44.47	0.90	58.61	45.37	Horiz./	74.0	54.0	-15.39	-8.63
2390.000	58.28	45.75	0.90	59.18	46.65	Vert.	74.0	54.0	-14.82	-7.35
Restricted Frequency Bands Data_802.11n HT40_CH High										
Frequency (MHz)	Read Level (dBuV)		Factor (dB)	Emission (dBuV/m)		Horiz./ Vert.	Limit (dBuV/m)		Margin(dB)	
	PK	AV		PK	AV		PK	AV	PK	AV
2483.500	59.68	45.72	0.90	60.58	46.62	Horiz./	74.0	54.0	-13.42	-7.38
2483.500	60.63	45.83	0.90	61.53	46.73	Vert.	74.0	54.0	-12.47	-7.27

Harmonics Radiated Emission Data 802.11b CH Low										
Frequency (MHz)	Read Level (dBuV)		Factor (dB)	Emission (dBuV/m)		Horiz./ Vert.	Limit (dBuV/m)		Margin(dB)	
	PK	AV		PK	AV		PK	AV	PK	AV
4824.000	40.16	29.32	10.10	50.26	39.42	Horiz./	74.0	54.0	-23.74	-14.58
4824.000	40.33	29.53	10.10	50.43	39.63	Vert.	74.0	54.0	-23.57	-14.37
7236.000	39.69	27.57	13.10	52.79	40.67	Horiz./	74.0	54.0	-21.21	-13.33
7236.000	38.82	27.48	13.10	51.92	40.58	Vert.	74.0	54.0	-22.08	-13.42
24120.00	-	-	-	-	-	-	-	-	-	-
24120.00	-	-	-	-	-	-	-	-	-	-
Harmonics Radiated Emission Data 802.11b CH Mid										
Frequency (MHz)	Read Level (dBuV)		Factor (dB)	Emission (dBuV/m)		Horiz./ Vert.	Limit (dBuV/m)		Margin(dB)	
	PK	AV		PK	AV		PK	AV	PK	AV
4874.000	39.15	29.93	10.10	49.25	40.03	Horiz./	74.0	54.0	-24.75	-13.97
4874.000	40.59	29.18	10.10	50.69	39.28	Vert.	74.0	54.0	-23.31	-14.72
7311.000	38.06	27.07	13.10	51.16	40.17	Horiz./	74.0	54.0	-22.84	-13.83
7311.000	38.43	27.55	13.10	51.53	40.65	Vert.	74.0	54.0	-22.47	-13.35
24370.00	-	-	-	-	-	-	-	-	-	-
24370.00	-	-	-	-	-	-	-	-	-	-
Harmonics Radiated Emission Data 802.11b CH Hgih										
Frequency (MHz)	Read Level (dBuV)		Factor (dB)	Emission (dBuV/m)		Horiz./ Vert.	Limit (dBuV/m)		Margin(dB)	
	PK	AV		PK	AV		PK	AV	PK	AV
4924.000	40.02	30.48	10.10	50.12	40.58	Horiz./	74.0	54.0	-23.88	-13.42
4924.000	42.58	30.03	10.10	52.68	40.13	Vert.	74.0	54.0	-21.32	-13.87
7386.000	40.49	28.72	13.10	53.59	41.82	Horiz./	74.0	54.0	-20.41	-12.18
7386.000	40.11	28.43	13.10	53.21	41.53	Vert.	74.0	54.0	-20.79	-12.47
24620.00	-	-	-	-	-	-	-	-	-	-
24620.00	-	-	-	-	-	-	-	-	-	-

- Note:**
- (1) All Reading Levels below 1GHz are Quasi-Peak, above are peak and average value.
 - (2) Emission Level = Reading Level + Probe Factor + Cable Loss - Preamp Gain.
 - (3) Span shall wide enough to fully capture three mission being measured;
Set RBW = 1 MHz, VBW= 3MHz for f > 1 GHz for peak measurement.
For average measurement: VBW = 10 Hz, when duty cycle is no less than 98 percent. $VBW \geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
 - (4) The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.
 - (5) Where an emission level is indicated by a -, levels had a margin greater than 20 dB when compared to the limit.

Harmonics Radiated Emission Data 802.11g_CH Low										
Frequency (MHz)	Read Level (dBuV)		Factor (dB)	Emission (dBuV/m)		Horiz./Vert.	Limit (dBuV/m)		Margin(dB)	
	PK	AV		PK	AV		PK	AV	PK	AV
4824.000	39.72	28.86	10.10	49.82	38.96	Horiz./	74.0	54.0	-24.18	-15.04
4824.000	42.52	30.84	10.10	52.62	40.94	Vert.	74.0	54.0	-21.38	-13.06
7236.000	36.47	25.53	13.10	49.57	38.63	Horiz./	74.0	54.0	-24.43	-15.37
7236.000	39.08	27.71	13.10	52.18	40.81	Vert.	74.0	54.0	-21.82	-13.19
24120.00	-	-	-	-	-	-	-	-	-	-
24120.00	-	-	-	-	-	-	-	-	-	-
Harmonics Radiated Emission Data 802.11g_CH Mid										
Frequency (MHz)	Read Level (dBuV)		Factor (dB)	Emission (dBuV/m)		Horiz./Vert.	Limit (dBuV/m)		Margin(dB)	
	PK	AV		PK	AV		PK	AV	PK	AV
4874.000	38.84	27.48	10.10	48.94	37.58	Horiz./	74.0	54.0	-25.06	-16.42
4874.000	38.52	27.41	10.10	48.62	37.51	Vert.	74.0	54.0	-25.38	-16.49
7311.000	39.23	27.09	13.10	52.33	40.19	Horiz./	74.0	54.0	-21.67	-13.81
7311.000	39.11	27.31	13.10	52.21	40.41	Vert.	74.0	54.0	-21.79	-13.59
24370.00	-	-	-	-	-	-	-	-	-	-
24370.00	-	-	-	-	-	-	-	-	-	-
Harmonics Radiated Emission Data 802.11g_CH Hgih										
Frequency (MHz)	Read Level (dBuV)		Factor (dB)	Emission (dBuV/m)		Horiz./Vert.	Limit (dBuV/m)		Margin(dB)	
	PK	AV		PK	AV		PK	AV	PK	AV
4924.000	38.27	26.74	10.10	48.37	36.84	Horiz./	74.0	54.0	-25.63	-17.16
4924.000	38.13	26.76	10.10	48.23	36.86	Vert.	74.0	54.0	-25.77	-17.14
7386.000	39.33	27.27	13.10	52.43	40.37	Horiz./	74.0	54.0	-21.57	-13.63
7386.000	38.79	27.18	13.10	51.89	40.28	Vert.	74.0	54.0	-22.11	-13.72
24620.00	-	-	-	-	-	-	-	-	-	-
24620.00	-	-	-	-	-	-	-	-	-	-

- Note:**
- (1) All Reading Levels below 1GHz are Quasi-Peak, above are peak and average value.
 - (2) Emission Level = Reading Level + Probe Factor + Cable Loss - Preamp Gain.
 - (3) Span shall wide enough to fully capture the emission being measured;
Set RBW = 1 MHz, VBW= 3MHz for $f > 1$ GHz for peak measurement.
For average measurement: VBW = 10 Hz, when duty cycle is no less than 98 percent. $VBW \geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
 - (4) The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.
 - (5) Where an emission level is indicated by a -, levels had a margin greater than 20 dB when compared to the limit.

Harmonics Radiated Emission Data 802.11n HT20_CH Low										
Frequency (MHz)	Read Level (dBuV)		Factor (dB)	Emission (dBuV/m)		Horiz./ Vert.	Limit (dBuV/m)		Margin(dB)	
	PK	AV		PK	AV		PK	AV	PK	AV
4824.000	38.42	28.03	10.10	48.52	38.13	Horiz./	74.0	54.0	-25.48	-15.87
4824.000	38.19	26.28	10.10	48.29	36.38	Vert.	74.0	54.0	-25.71	-17.62
7236.000	39.59	28.63	13.10	52.69	41.73	Horiz./	74.0	54.0	-21.31	-12.27
7236.000	39.28	28.55	13.10	52.38	41.65	Vert.	74.0	54.0	-21.62	-12.35
24120.00	-	-	-	-	-	-	-	-	-	-
24120.00	-	-	-	-	-	-	-	-	-	-
Harmonics Radiated Emission Data 802.11n HT20_CH Mid										
Frequency (MHz)	Read Level (dBuV)		Factor (dB)	Emission (dBuV/m)		Horiz./ Vert.	Limit (dBuV/m)		Margin(dB)	
	PK	AV		PK	AV		PK	AV	PK	AV
4874.000	39.04	26.77	10.10	49.14	36.87	Horiz./	74.0	54.0	-24.86	-17.13
4874.000	38.59	27.48	10.10	48.69	37.58	Vert.	74.0	54.0	-25.31	-16.42
7311.000	38.95	28.32	13.10	52.05	41.42	Horiz./	74.0	54.0	-21.95	-12.58
7311.000	38.88	28.43	13.10	51.98	41.53	Vert.	74.0	54.0	-22.02	-12.47
24370.00	-	-	-	-	-	-	-	-	-	-
24370.00	-	-	-	-	-	-	-	-	-	-
Harmonics Radiated Emission Data 802.11n HT20_CH Hgih										
Frequency (MHz)	Read Level (dBuV)		Factor (dB)	Emission (dBuV/m)		Horiz./ Vert.	Limit (dBuV/m)		Margin(dB)	
	PK	AV		PK	AV		PK	AV	PK	AV
4924.000	38.93	26.88	10.10	49.03	36.98	Horiz./	74.0	54.0	-24.97	-17.02
4924.000	39.22	27.05	10.10	49.32	37.15	Vert.	74.0	54.0	-24.68	-16.85
7386.000	39.26	27.68	13.10	52.36	40.78	Horiz./	74.0	54.0	-21.64	-13.22
7386.000	38.79	27.29	13.10	51.89	40.39	Vert.	74.0	54.0	-22.11	-13.61
24620.00	-	-	-	-	-	-	-	-	-	-
24620.00	-	-	-	-	-	-	-	-	-	-

- Note:**
- (1) All Reading Levels below 1GHz are Quasi-Peak, above are peak and average value.
 - (2) Emission Level = Reading Level + Probe Factor + Cable Loss - Preamp Gain.
 - (3) Span shall wide enough to fully capture three mission being measured;
Set RBW = 1 MHz, VBW= 3MHz for $f > 1$ GHz for peak measurement.
For average measurement: VBW = 10 Hz, when duty cycle is no less than 98 percent. $VBW \geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
 - (4) The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.
 - (5) Where an emission level is indicated by a -, levels had a margin greater than 20 dB when compared to the limit.

Harmonics Radiated Emission Data 802.11n HT40 CH Low										
Frequency (MHz)	Read Level (dBuV)		Factor (dB)	Emission (dBuV/m)		Horiz./ Vert.	Limit (dBuV/m)		Margin(dB)	
	PK	AV		PK	AV		PK	AV	PK	AV
4844.000	37.49	27.19	10.10	47.59	37.29	Horiz./	74.0	54.0	-26.41	-16.71
4844.000	37.25	26.03	10.10	47.35	36.13	Vert.	74.0	54.0	-26.65	-17.87
7266.000	39.17	26.98	13.10	52.27	40.08	Horiz./	74.0	54.0	-21.73	-13.92
7266.000	39.02	27.03	13.10	52.12	40.13	Vert.	74.0	54.0	-21.88	-13.87
24220.04	-	-	-	-	-	-	-	-	-	-
24220.20	-	-	-	-	-	-	-	-	-	-
Harmonics Radiated Emission Data 802.11n HT40 CH Mid										
Frequency (MHz)	Read Level (dBuV)		Factor (dB)	Emission (dBuV/m)		Horiz./ Vert.	Limit (dBuV/m)		Margin(dB)	
	PK	AV		PK	AV		PK	AV	PK	AV
4874.000	38.59	26.02	10.10	48.69	36.12	Horiz./	74.0	54.0	-25.31	-17.88
4874.000	38.19	26.48	10.10	48.29	36.58	Vert.	74.0	54.0	-25.71	-17.42
7311.000	38.15	27.55	13.10	51.25	40.65	Horiz./	74.0	54.0	-22.75	-13.35
7311.000	37.13	27.14	13.10	50.23	40.24	Vert.	74.0	54.0	-23.77	-13.76
24370.00	-	-	-	-	-	-	-	-	-	-
24370.00	-	-	-	-	-	-	-	-	-	-
Harmonics Radiated Emission Data 802.11n HT40 CH Hgih										
Frequency (MHz)	Read Level (dBuV)		Factor (dB)	Emission (dBuV/m)		Horiz./ Vert.	Limit (dBuV/m)		Margin(dB)	
	PK	AV		PK	AV		PK	AV	PK	AV
4904.000	38.45	26.18	10.10	48.55	36.28	Horiz./	74.0	54.0	-25.45	-17.72
4904.000	38.53	26.85	10.10	48.63	36.95	Vert.	74.0	54.0	-25.37	-17.05
7356.000	37.19	25.49	13.10	50.29	38.59	Horiz./	74.0	54.0	-23.71	-15.41
7356.000	35.58	25.32	13.10	48.68	38.42	Vert.	74.0	54.0	-25.32	-15.58
24520.11	-	-	-	-	-	-	-	-	-	-
24520.00	-	-	-	-	-	-	-	-	-	-

- Note:**
- (1) All Reading Levels below 1GHz are Quasi-Peak, above are peak and average value.
 - (2) Emission Level = Reading Level + Probe Factor + Cable Loss - Preamp Gain.
 - (3) Span shall wide enough to fully capture the mission being measured;
Set RBW = 1 MHz, VBW= 3MHz for $f > 1$ GHz for peak measurement.
For average measurement: VBW = 10 Hz, when duty cycle is no less than 98 percent. $VBW \geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
 - (4) The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.
 - (5) Where an emission level is indicated by a -, levels had a margin greater than 20 dB when compared to the limit.

**General Radiated Emission Data
For Frequency below 30MHz**

Frequency (MHz)	Read Level (dBuV)	Factor (dB)	Emission (dBuV/m)	Horiz./ Vert.	Limit (dBuV/m)	Margin (dB)
N/A						
N/A						
N/A						
N/A						
N/A						
N/A						

- Note:**
- (1) All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
 - (2) "N/A" remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
 - (3) Emission Level = Reading Level + Probe Factor + Cable Loss.

For Frequency from 30MHz to 1GHz

Frequency (MHz)	Read Level (dBuV)	Factor (dB)	Emission (dBuV/m)	Horiz./ Vert.	Limit (dBuV/m)	Margin (dB)
N/A						
N/A						
N/A						
N/A						
N/A						
N/A						

- Note:**
- (1) All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
 - (2) "N/A" remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
 - (3) Emission Level = Reading Level + Probe Factor + Cable Loss.

7. RF Exposure Requirements

Please refer to SAR report.

8. Photos of Testing

8.1 EUT Test Photographs

Please refer to Exhibits _External Test Setup Photos

8. 2 EUT Detailed Photographs

Please refer to Exhibits _External Photos & Internal Photos

9. FCC ID Label

Please refer to Exhibits _ ID Label & Location Info

10. Test Equipment

The following test equipment were used during the radiated & conducted emission test:

Equipment/ Facilities	Manufacturer	Model #	Serial No.	Cal/Char Date	Due Date
Turntable	Innco systems GmbH	CT-0801	N/A	NCR	NCR
Antenna Tower	Innco systems GmbH	MA-4640-XP-ET	N/A	NCR	NCR
Controller	Innco systems GmbH	CO3000	955/38850716L	NCR	NCR
Pre-Amplifier	Agilent	87405C	MY47010722	Dec.6, 2019	Dec.6, 2021
EMI Test Receiver	Rohde & Schwarz	ESR7	101091	Nov.21, 2018	Nov.21, 2020
Spectrum Analyzer	Rohde & Schwarz	FSP40	100273	Dec.14, 2019	Dec.14, 2021
Vector Signal Generator	Rohde & Schwarz	SMU200A	101824	Dec.13, 2017	Dec.13, 2020
Signal Generator	Rohde & Schwarz	SMB100A	177847	Dec.13, 2017	Dec.13, 2020
Power Meter	Rohde & Schwarz	OSP-B157	KMO-HK015	Dec.13, 2017	Dec.13, 2020
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	124004	Jan. 14, 2020	Jan. 14, 2023
Regulatory Test System 30 MHz to 40 GHz	Rohde & Schwarz	TS8997	KMO-HK015	Dec.13, 2017	Dec.13, 2020
Trilog-Super Broadband Antenna	SCHWARZBECK	VULB9161	9161-4079	Nov.27, 2018	Nov.27, 2021
Broad-Band Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-565	Nov.29, 2018	Nov.29, 2021
AMN	Rohde & Schwarz	ESH3-Z5	100197	Dec.25, 2017	Dec.25, 2020
AMN	CYBERTEK	EM5040A	E115040054	Nov.21, 2018	Nov.21, 2021
KMO Shielded Room	KMO	KMO-001	N/A	NCR	NCR
Coaxial Cable with N-Connectors	SCHWARZBECK	AK9515H	95549	Sep.18, 2019	Sep.18, 2021
3m Anechoic Chamber	KMO	KMO-3AC	N/A	Dec.23, 2019	Dec.23, 2021
Temperature Chamber	TABAI	PSL-4GTW	N/A	Feb.10, 2019	Feb.10, 2021

-----End of Report -----

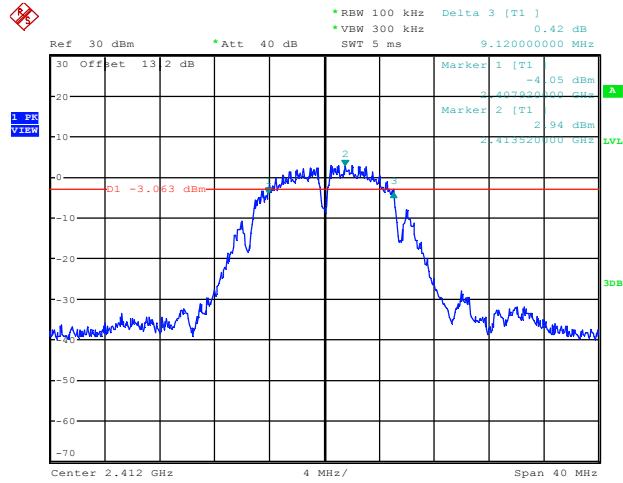


Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	9.120	2407.920	2417.040	0.5	PASS
		2437	8.880	2432.200	2441.080	0.5	PASS
		2462	9.160	2457.440	2466.600	0.5	PASS
11G	Ant1	2412	15.880	2404.400	2420.280	0.5	PASS
		2437	15.880	2428.680	2444.560	0.5	PASS
		2462	16.400	2453.840	2470.240	0.5	PASS
11N20SISO	Ant1	2412	16.400	2404.480	2420.880	0.5	PASS
		2437	16.440	2428.160	2444.600	0.5	PASS
		2462	17.400	2453.440	2470.840	0.5	PASS
11N40SISO	Ant1	2422	36.240	2404.000	2440.240	0.5	PASS
		2437	36.080	2419.160	2455.240	0.5	PASS
		2452	36.000	2434.000	2470.000	0.5	PASS

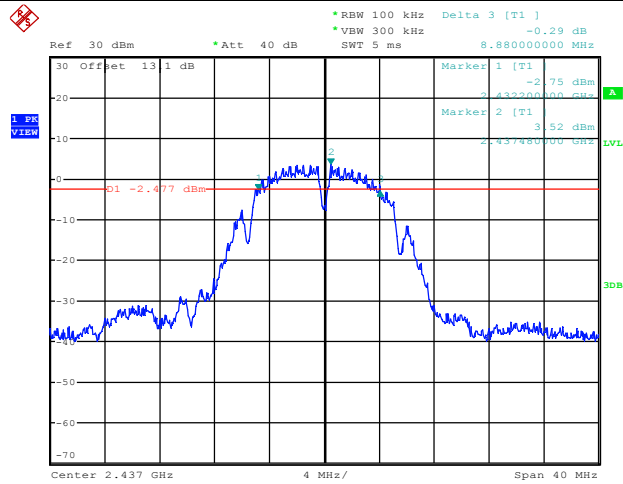
Test Graphs

11B_Ant1_2412



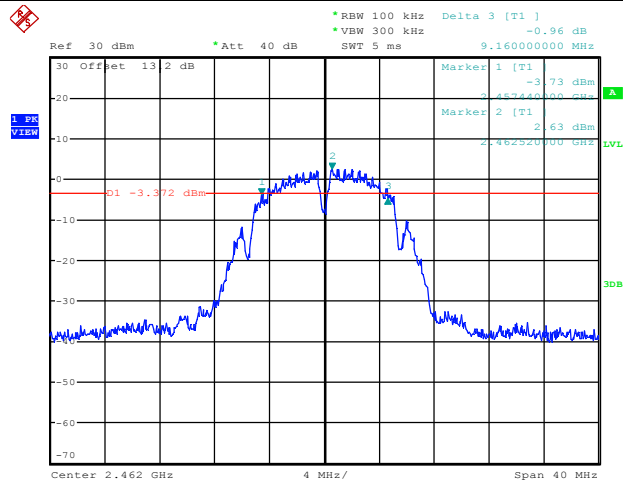
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11B_Ant1_2437



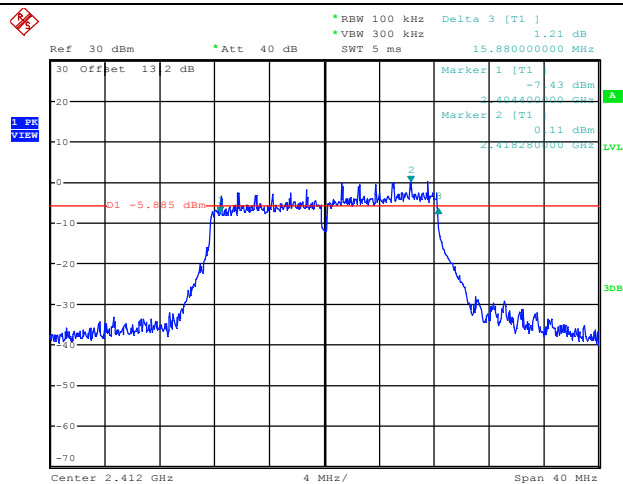
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11B_Ant1_2462



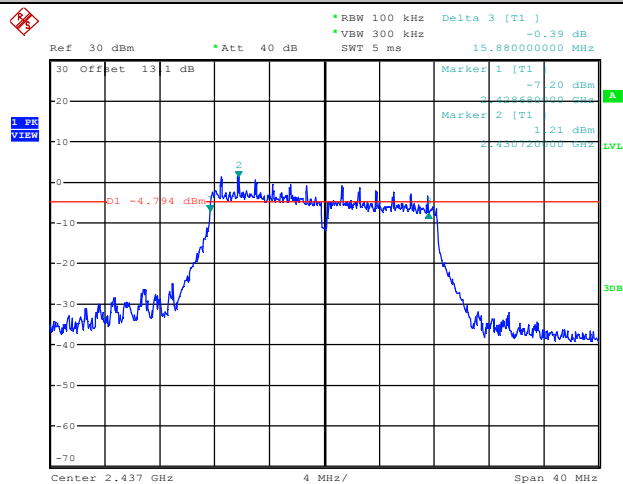
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11G_Ant1_2412



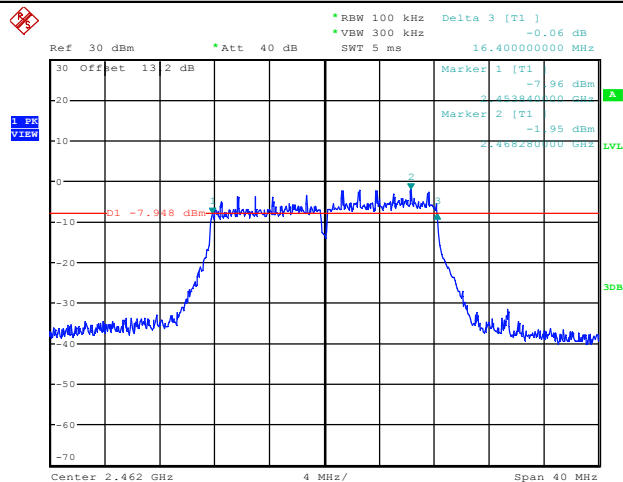
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11G_Ant1_2437



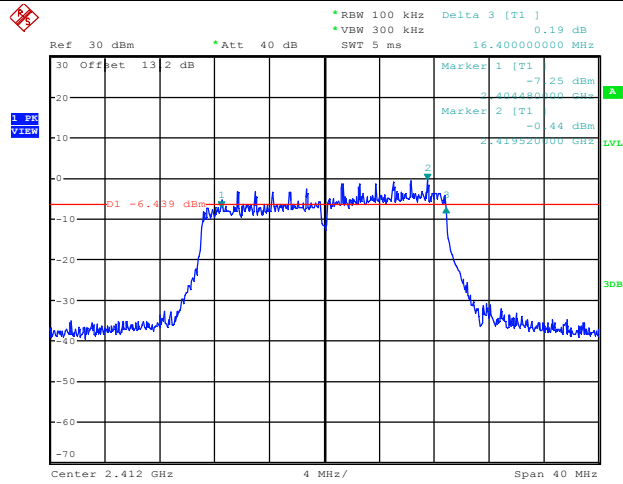
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11G_Ant1_2462



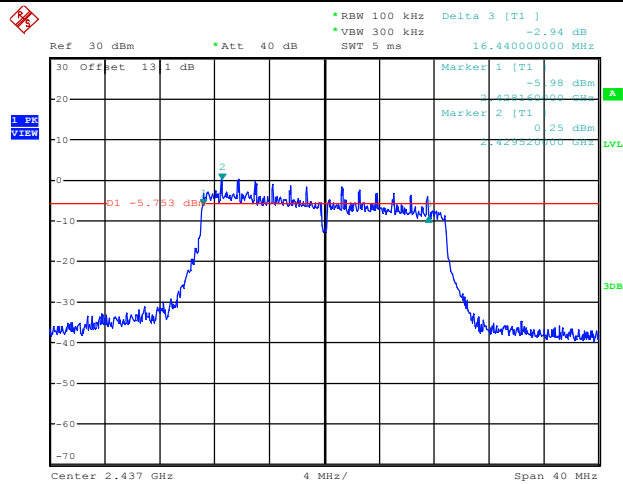
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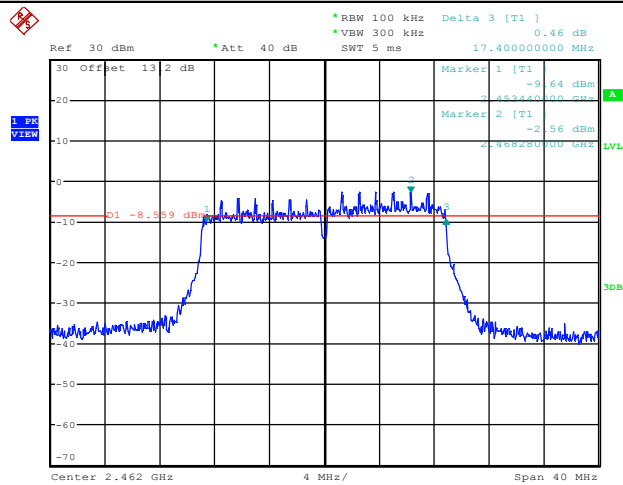
Date: 4.JUL.2020 15:40:45

11N20SISO_Ant1_2437



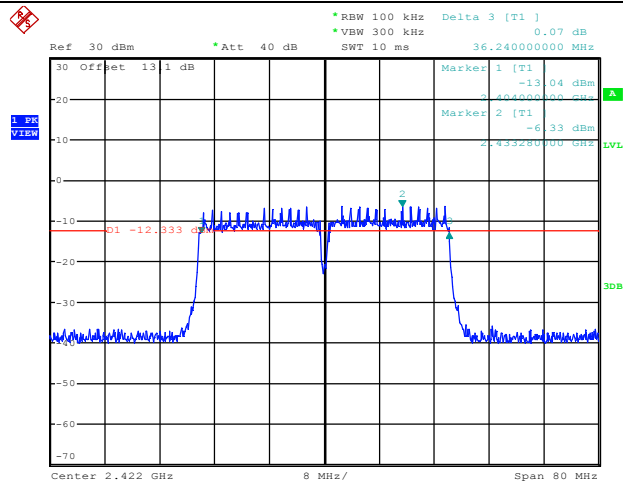
Date: 4.JUL.2020 15:46:10

11N20SISO_Ant1_2462



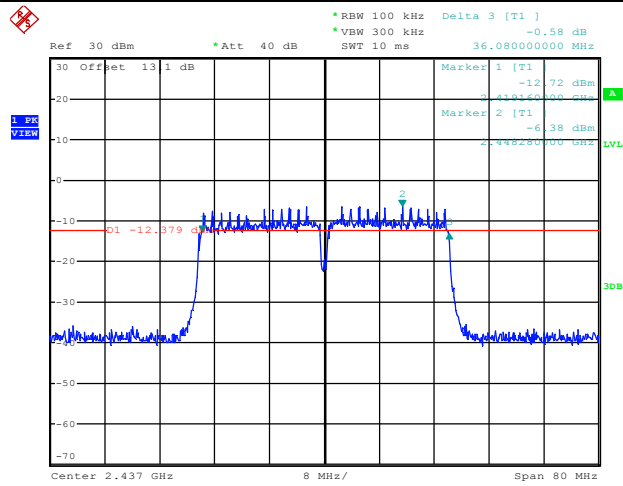
Date: 4.JUL.2020 15:50:46

11N40SISO_Ant1_2422



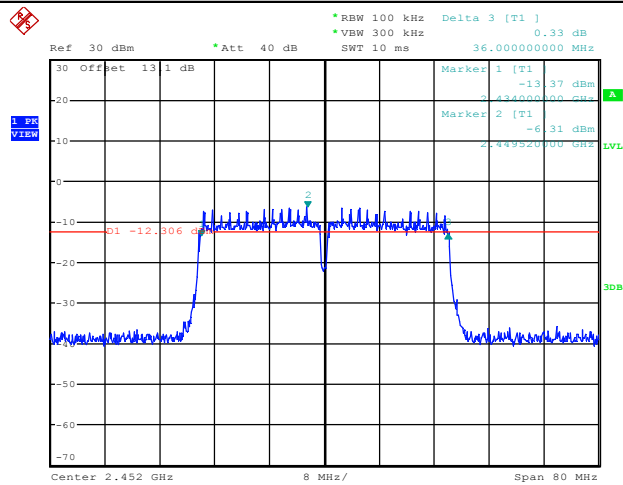
Date: 18.MAY.2020 12:02:17

11N40SISO_Ant1_2437



Date: 18.MAY.2020 12:05:10

11N40SISO_Ant1_2452



Date: 18.MAY.2020 12:07:24

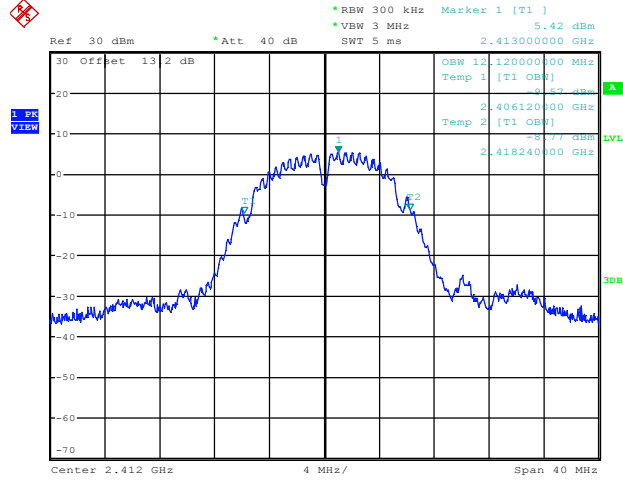
Appendix B: Occupied Channel Bandwidth

Test Result

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	12.12	0.000	0.000	---	PASS
		2437	11.72	0.000	0.000	---	PASS
		2442	14.7	0.000	0.000	---	PASS
		2462	11.68	0.000	0.000	---	PASS
		2472	12.96	0.000	0.000	---	PASS
11G	Ant1	2412	17.4	0.000	0.000	---	PASS
		2437	17.56	0.000	0.000	---	PASS
		2462	17.32	0.000	0.000	---	PASS
11N20SISO	Ant1	2412	18.08	0.000	0.000	---	PASS
		2437	18.16	0.000	0.000	---	PASS
		2462	18.08	0.000	0.000	---	PASS
11N40SISO	Ant1	2422	36.72	0.000	0.000	---	PASS
		2437	36.56	0.000	0.000	---	PASS
		2452	36.64	0.000	0.000	---	PASS

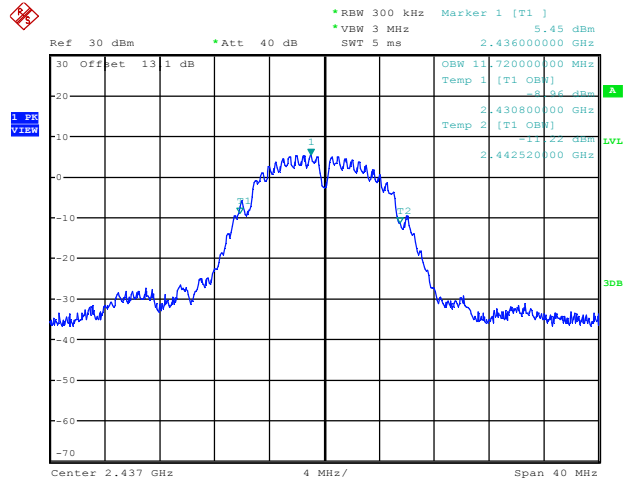
Test Graphs

11B_Ant1_2412



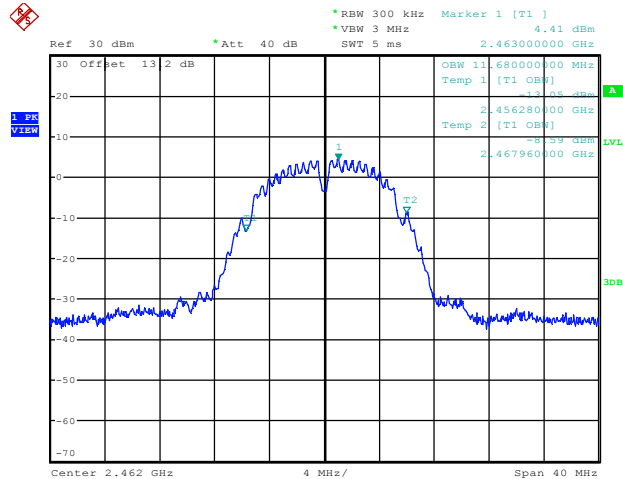
Date: 4.JUL.2020 15:12:01

11B_Ant1_2437



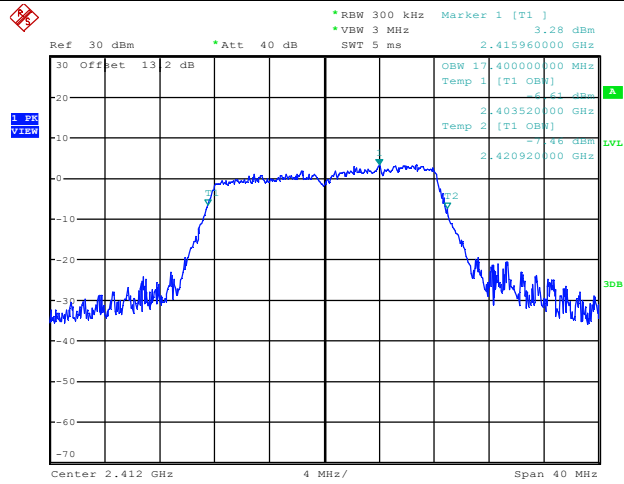
Date: 4.JUL.2020 15:17:30

11B_Ant1_2462



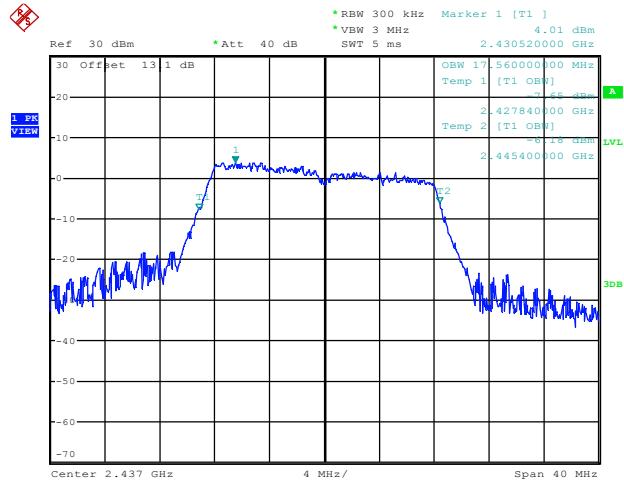
Date: 4.JUL.2020 15:21:15

11G_Ant1_2412



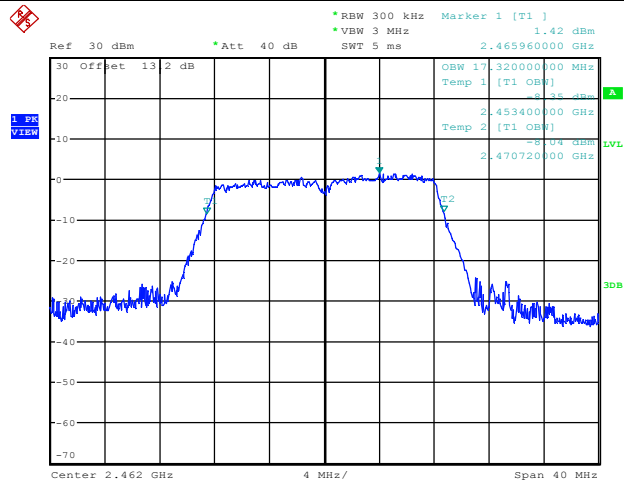
Date: 4.JUL.2020 15:26:10

11G_Ant1_2437



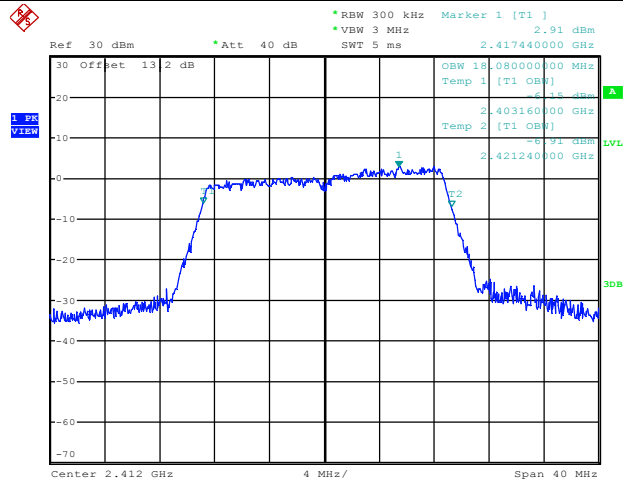
Date: 4.JUL.2020 15:30:55

11G_Ant1_2462



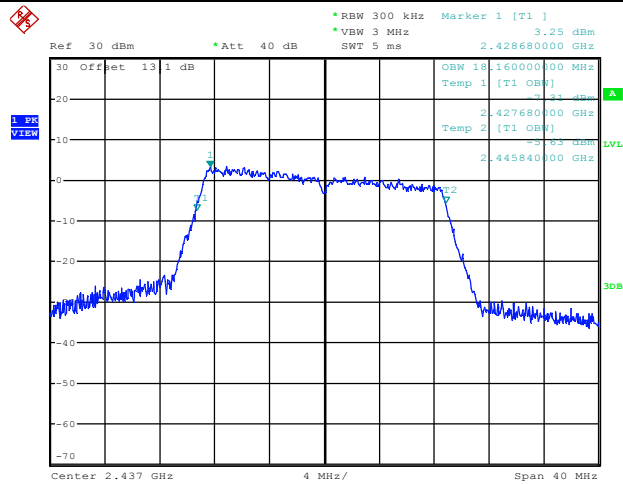
Date: 4.JUL.2020 15:35:07

11N20SISO_Ant1_2412



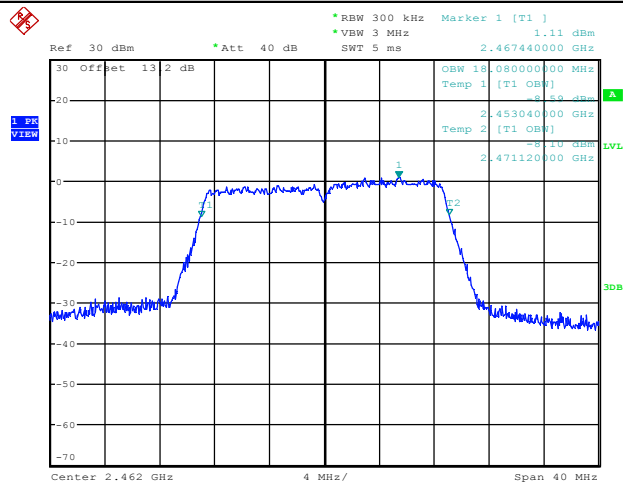
Date: 4.JUL.2020 15:40:58

11N20SISO_Ant1_2437



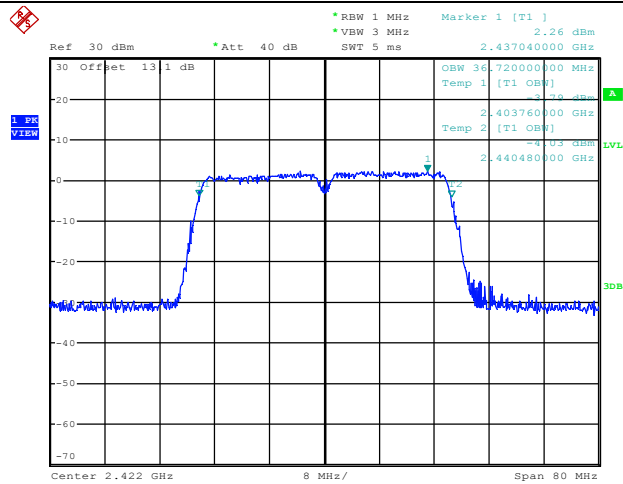
Date: 4.JUL.2020 15:46:23

11N20SISO_Ant1_2462



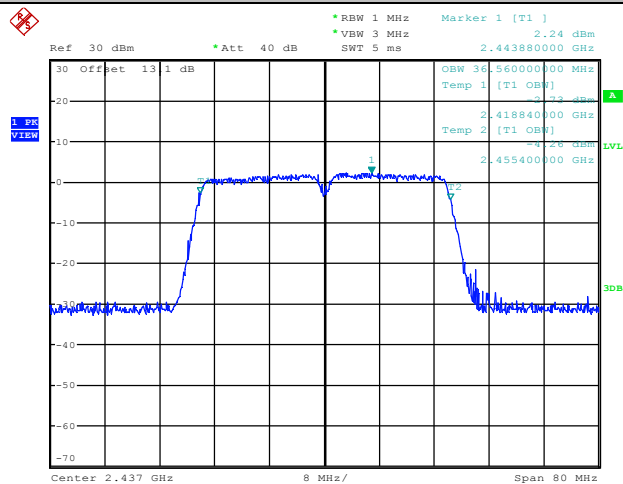
Date: 4.JUL.2020 15:50:59

11N40SISO_Ant1_2422



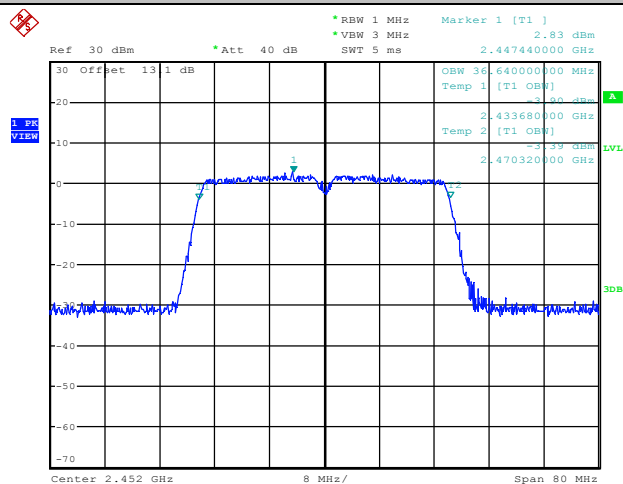
Date: 18.MAY.2020 12:02:32

11N40SISO_Ant1_2437



Date: 18.MAY.2020 12:05:24

11N40SISO_Ant1_2452



Date: 18.MAY.2020 12:07:39

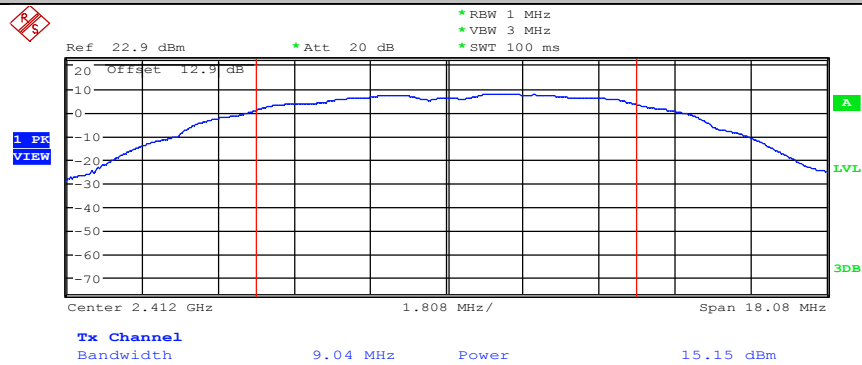
Appendix C: Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	2412	15.15	<=30	PASS
		2437	16.22	<=30	PASS
		2462	14.75	<=30	PASS
11G	Ant1	2412	18.26	<=30	PASS
		2437	18.65	<=30	PASS
		2462	16.64	<=30	PASS
11N20SISO	Ant1	2412	17.81	<=30	PASS
		2437	18.28	<=30	PASS
		2462	16.16	<=30	PASS
11N40SISO	Ant1	2422	18.73	<=30	PASS
		2437	18.66	<=30	PASS
		2452	15.65	<=30	PASS

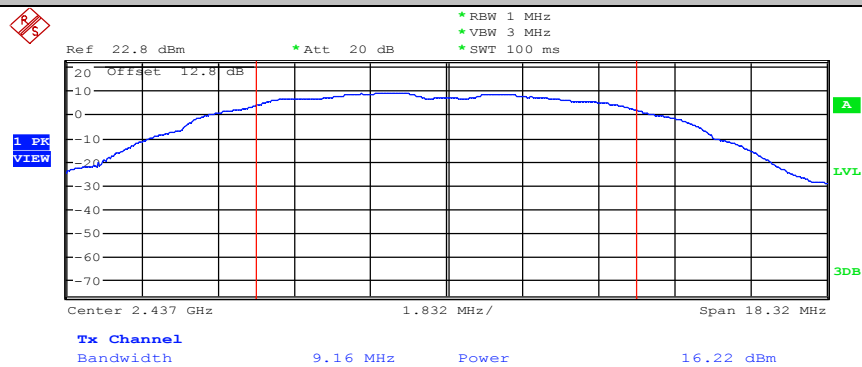
Test Graphs

11B_Ant1_2412



Date: 4.JUL.2020 16:56:40

11B_Ant1_2437

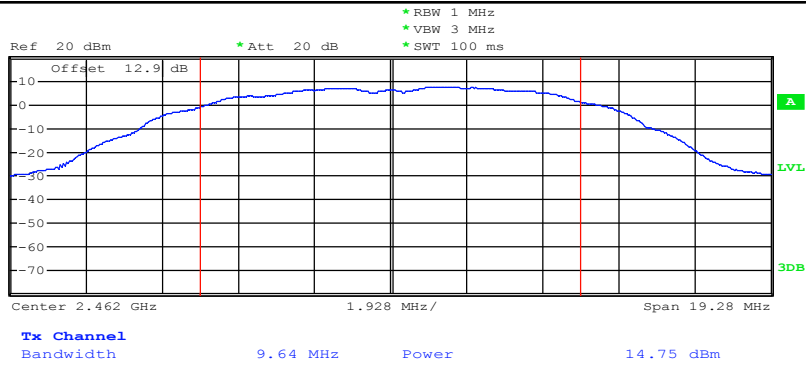


Date: 4.JUL.2020 16:58:09

11B_Ant1_2462



1 PK
VIEW

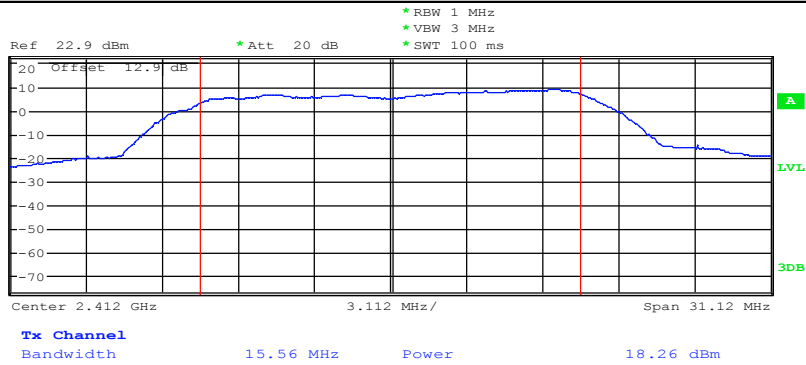


Date: 4.JUL.2020 16:59:11

11G_Ant1_2412



1 PK
VIEW

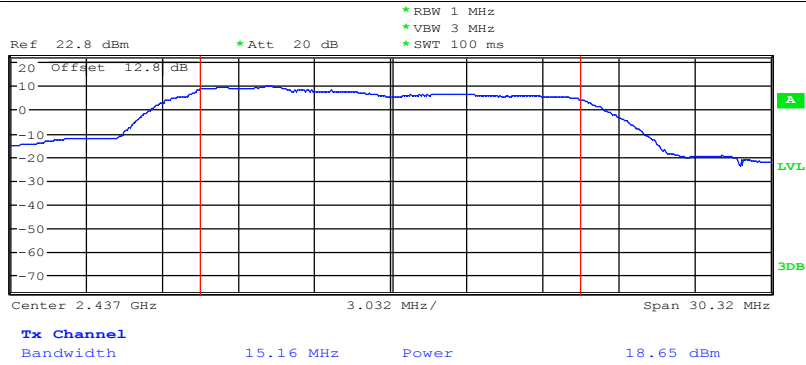


Date: 4.JUL.2020 17:00:39

11G_Ant1_2437



1 PK
VIEW

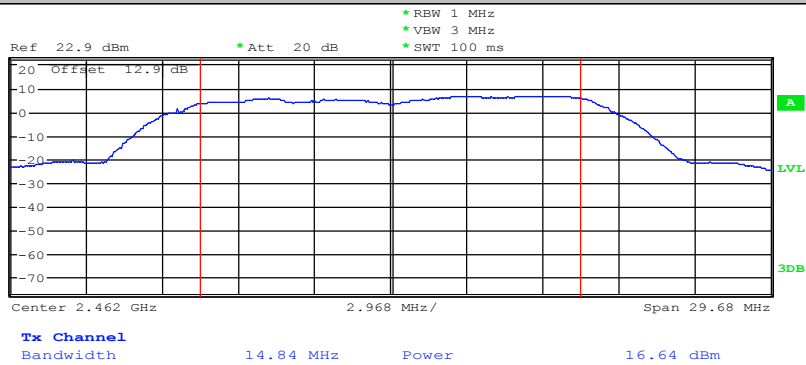


Date: 4.JUL.2020 17:01:42

11G_Ant1_2462



1 PK
VIEW

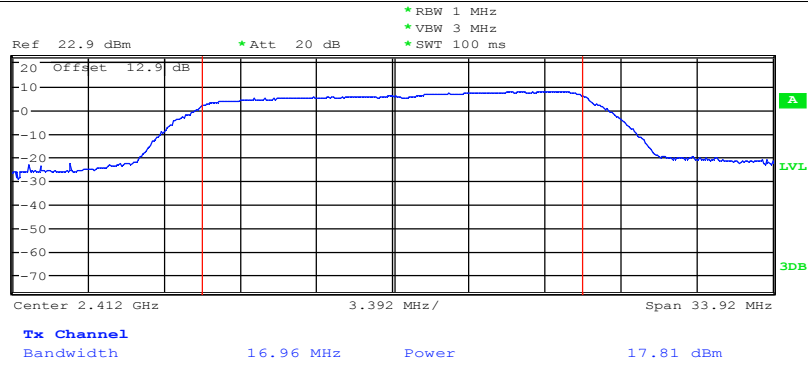


Date: 4.JUL.2020 17:02:52

11N20SISO_Ant1_2412



1 PK
VIEW

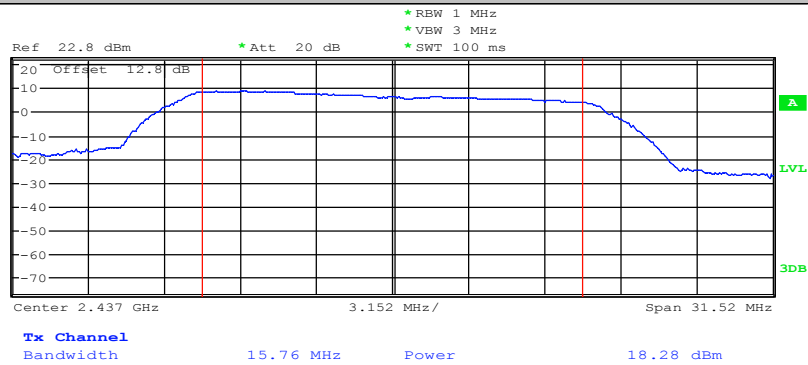


Date: 4.JUL.2020 17:03:59

11N20SISO_Ant1_2437



1 PK
VIEW

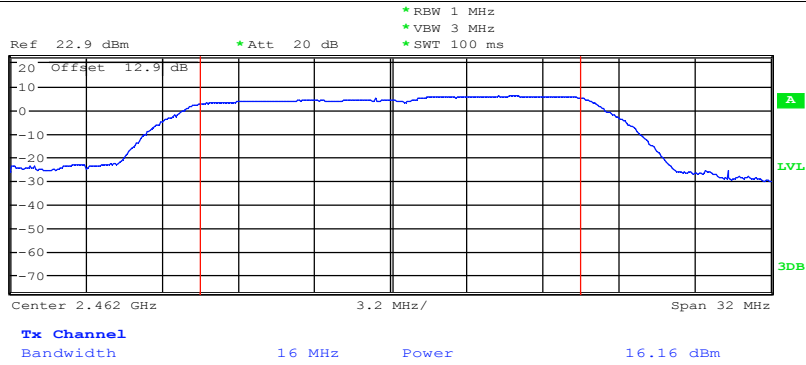


Date: 4.JUL.2020 17:05:05

11N20SISO_Ant1_2462



1 PK
VIEW

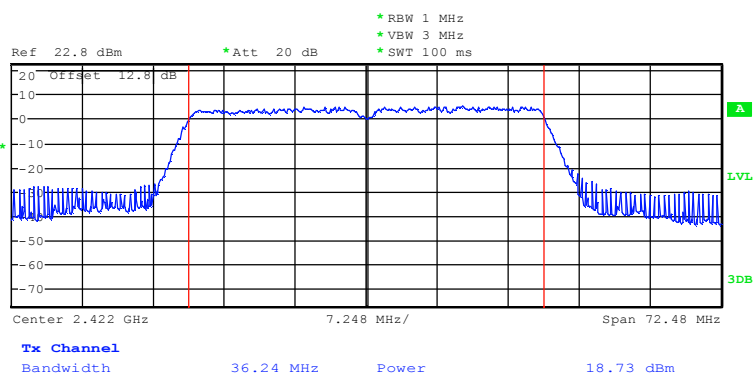


Date: 4.JUL.2020 17:06:32

11N40SISO_Ant1_2422

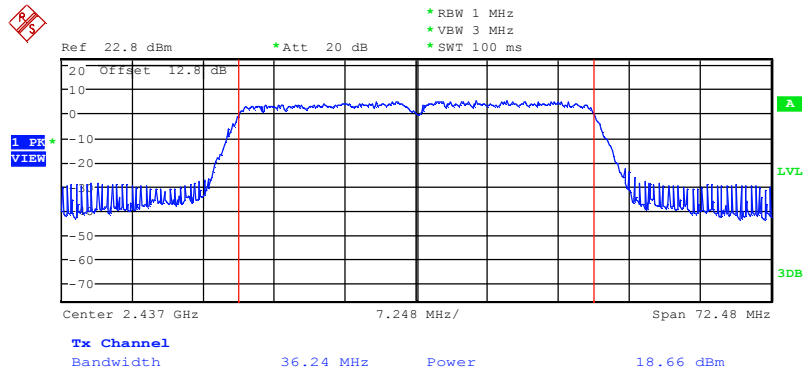


1 PK
VIEW



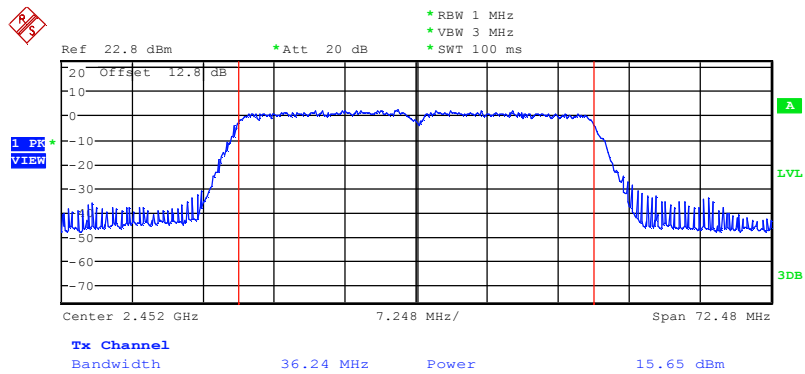
Date: 19.MAY.2020 11:18:41

11N40SISO_Ant1_2437



Date: 19.MAY.2020 11:21:09

11N40SISO_Ant1_2452



Date: 19.MAY.2020 11:20:11

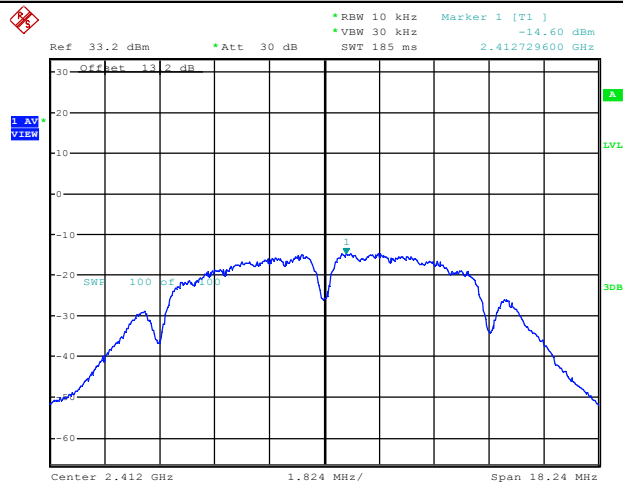
Appendix D: Maximum power spectral density

Test Result

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-14.6	<=8	PASS
		2437	-14.47	<=8	PASS
		2462	-15.37	<=8	PASS
11G	Ant1	2412	-18.97	<=8	PASS
		2437	-18.48	<=8	PASS
		2462	-20.58	<=8	PASS
11N20SISO	Ant1	2412	-19.64	<=8	PASS
		2437	-19.14	<=8	PASS
		2462	-21.57	<=8	PASS
11N40SISO	Ant1	2422	-26.16	<=8	PASS
		2437	-26.41	<=8	PASS
		2452	-26.27	<=8	PASS

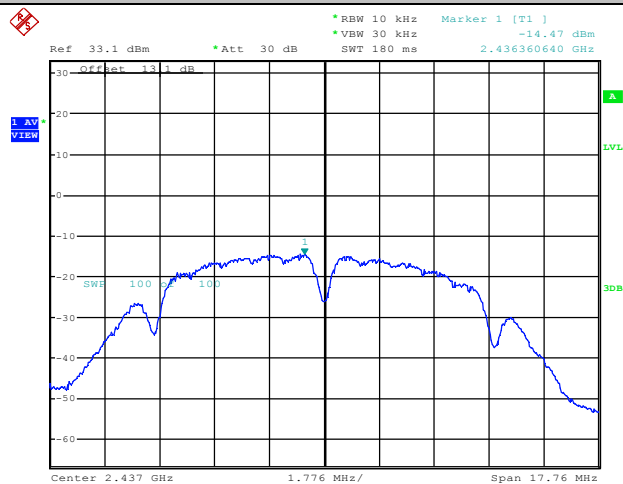
Test Graphs

11B_Ant1_2412



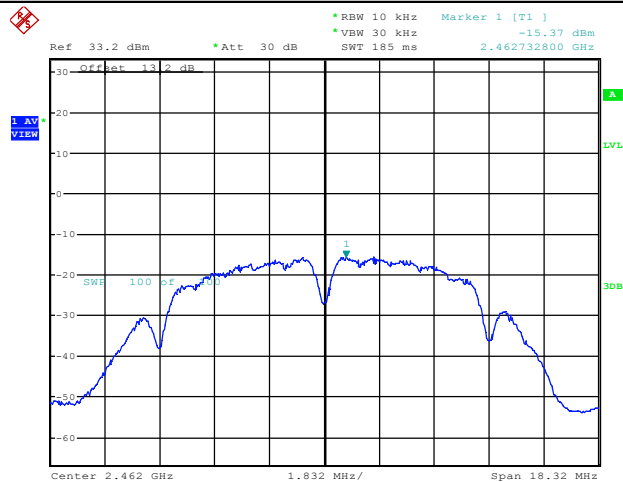
Date: 4.JUL.2020 15:13:22

11B_Ant1_2437



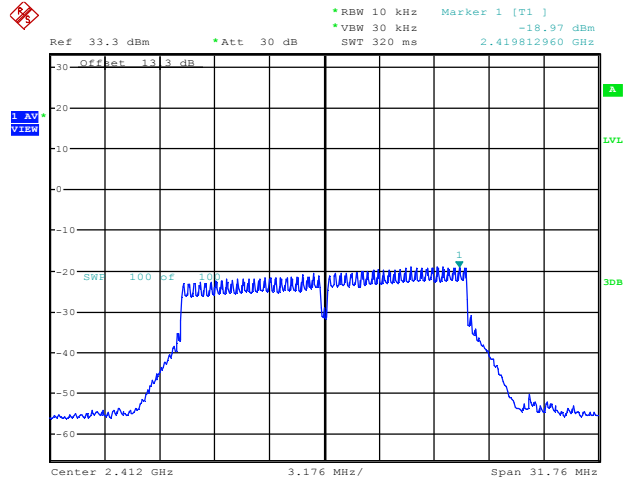
Date: 4.JUL.2020 15:18:02

11B_Ant1_2462



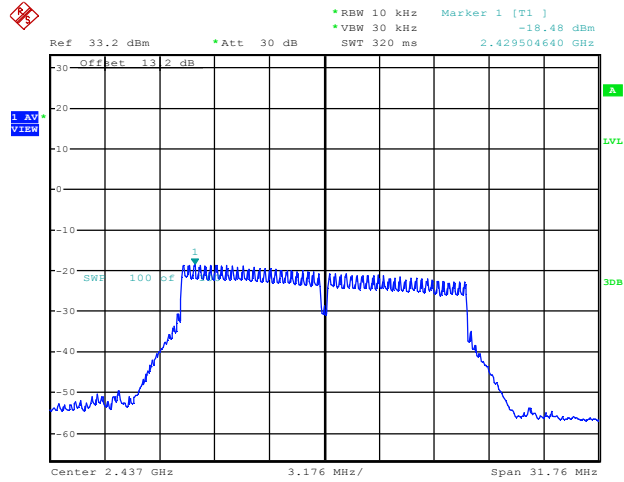
Date: 4.JUL.2020 15:22:36

11G_Ant1_2412



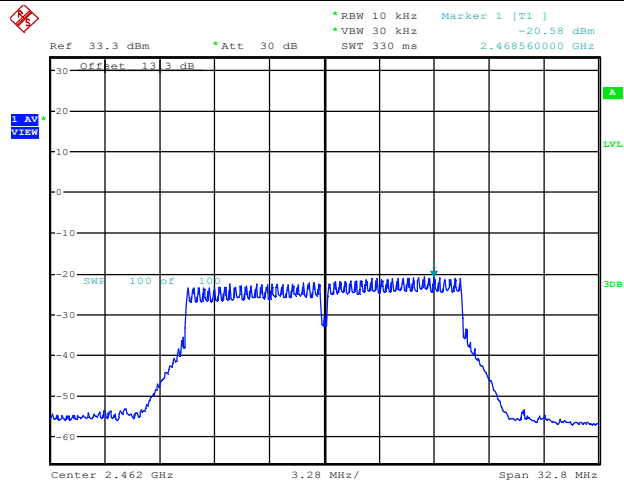
Date: 4.JUL.2020 16:16:45

11G_Ant1_2437



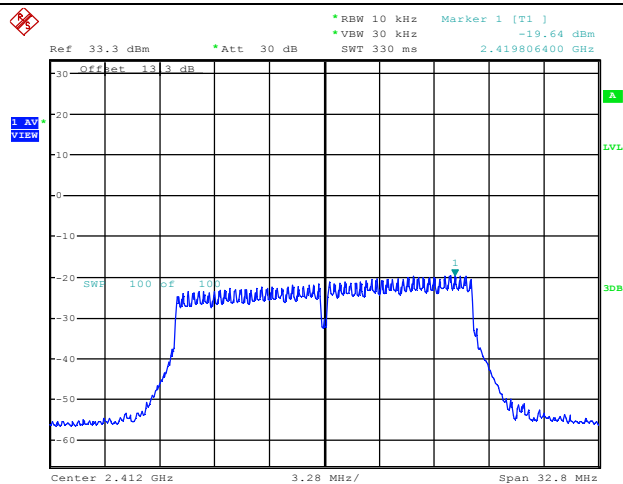
Date: 4.JUL.2020 16:21:53

11G_Ant1_2462



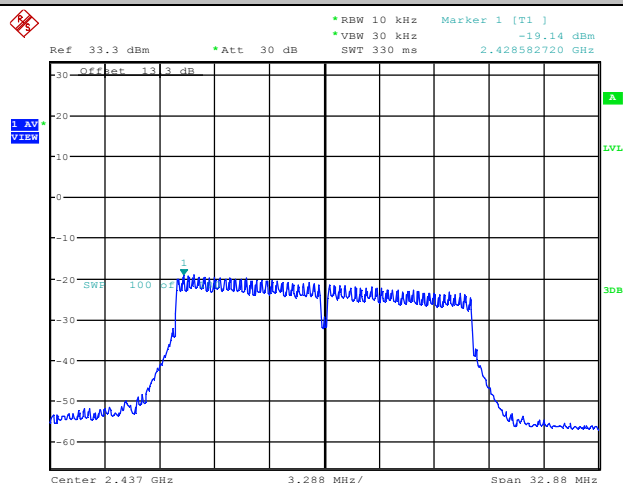
Date: 4.JUL.2020 16:23:39

11N20SISO_Ant1_2412



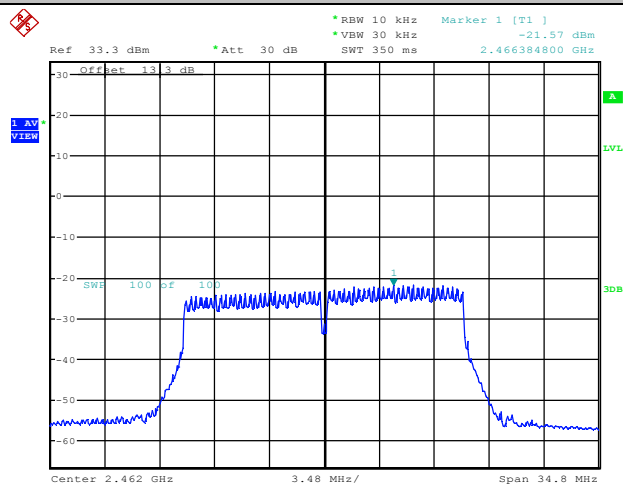
Date: 4.JUL.2020 16:26:56

11N20SISO_Ant1_2437



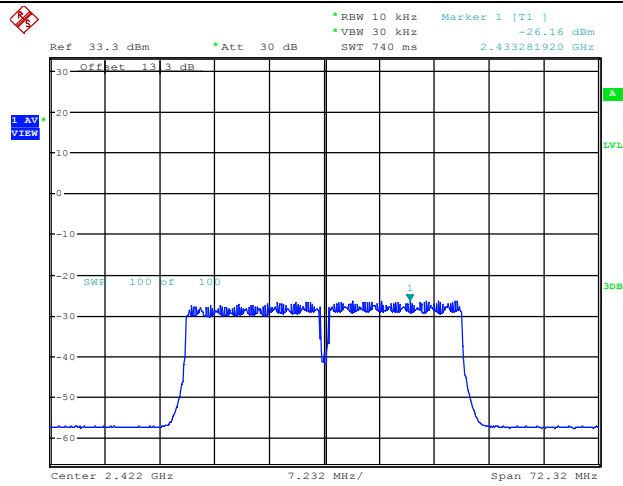
Date: 4.JUL.2020 16:36:04

11N20SISO_Ant1_2462



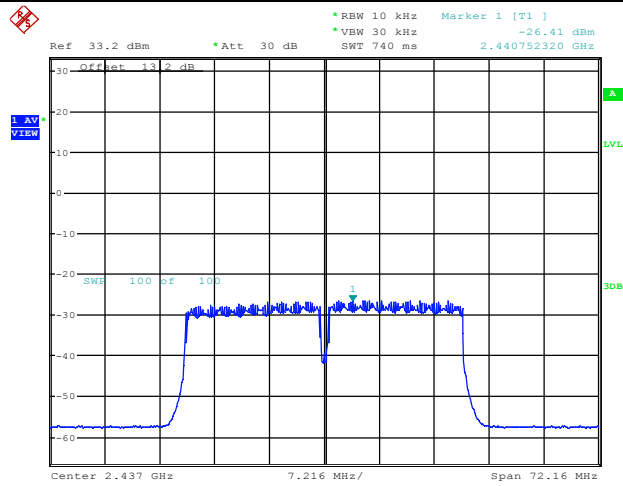
Date: 4.JUL.2020 16:37:51

11N40SISO_Ant1_2422



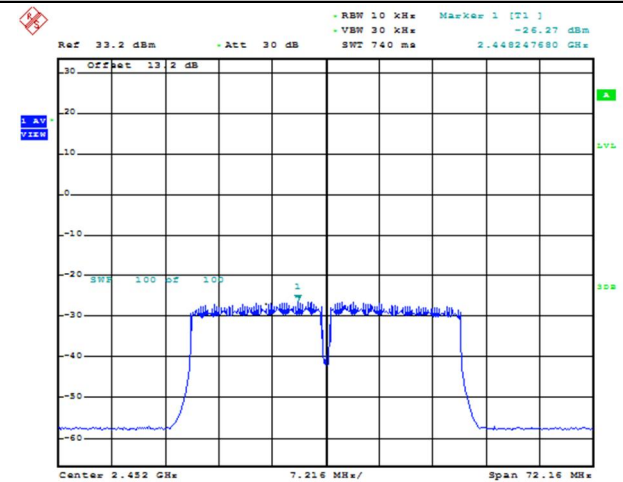
Date: 18.MAY.2020 11:48:44

11N40SISO_Ant1_2437



Date: 18.MAY.2020 11:50:40

11N40SISO_Ant1_2452



Date: 18.MAY.2020 12:00:45

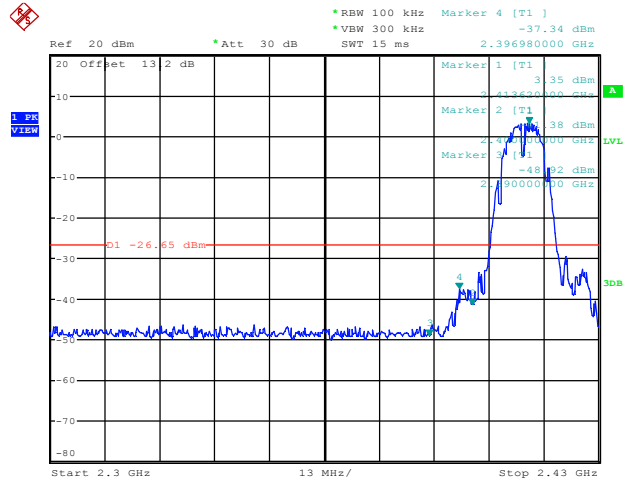
Appendix E: Band edge measurements

Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	3.35	-37.34	<=-26.65	PASS
		High	2462	2.35	-45.85	<=-27.65	PASS
			2472	-6.36	-46.16	<=-26.36	PASS
11G	Ant1	Low	2412	-0.10	-33.73	<=-30.1	PASS
		High	2462	-1.72	-45.57	<=-31.72	PASS
11N20SISO	Ant1	Low	2412	-0.54	-37.62	<=-30.54	PASS
		High	2462	-2.49	-45.5	<=-32.49	PASS
11N40SISO	Ant1	Low	2422	-6.62	-45.59	<=-36.62	PASS
		High	2452	-6.62	-45.48	<=-36.62	PASS

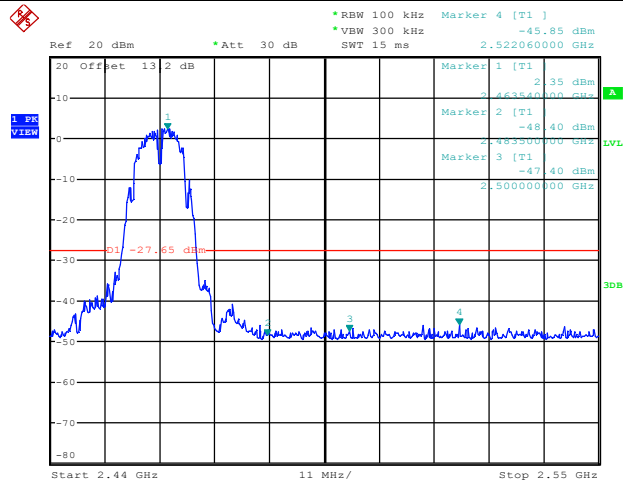
Test Graphs

11B_Ant1_Low_2412



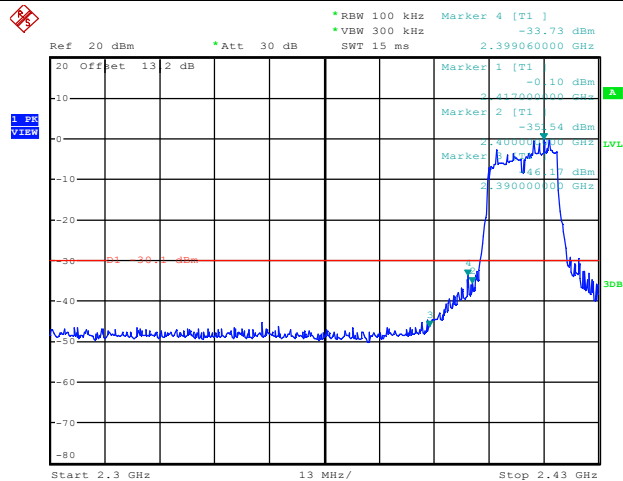
Date: 4.JUL.2020 15:13:34

11B_Ant1_High_2462



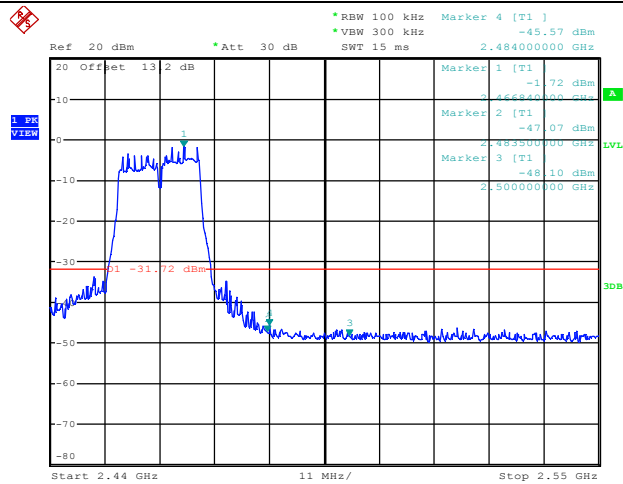
Date: 4.JUL.2020 15:22:48

11G_Ant1_Low_2412



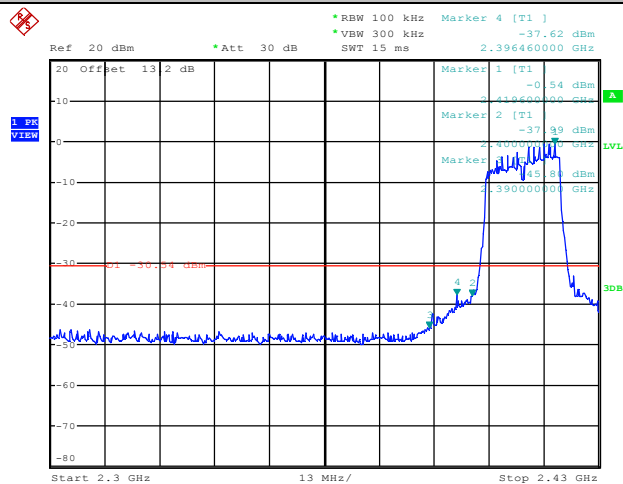
Date: 4.JUL.2020 16:16:57

11G_Ant1_High_2462



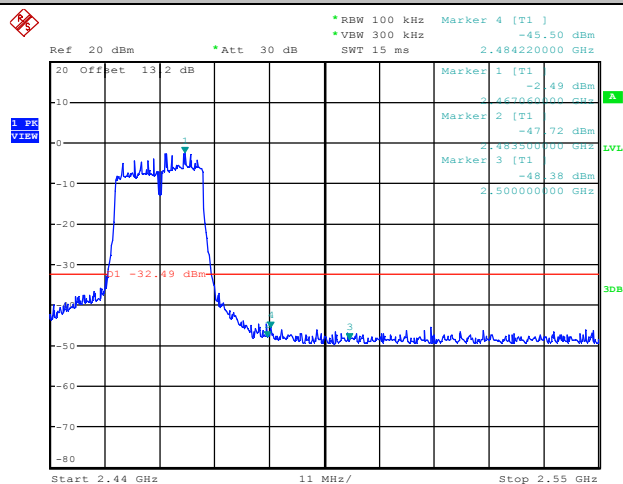
Date: 4.JUL.2020 16:23:51

11N20SISO_Ant1_Low_2412



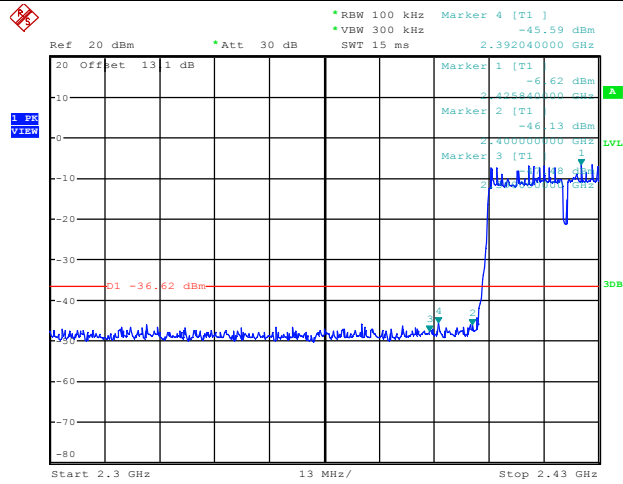
Date: 4.JUL.2020 16:27:08

11N20SISO_Ant1_High_2462



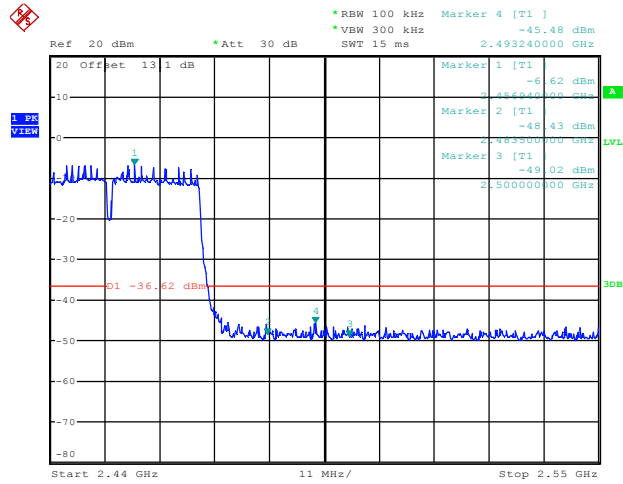
Date: 4.JUL.2020 16:38:04

11N40SISO_Ant1_Low_2422



Date: 18.MAY.2020 12:02:46

11N40SISO_Ant1_High_2452



Date: 18.MAY.2020 12:07:53

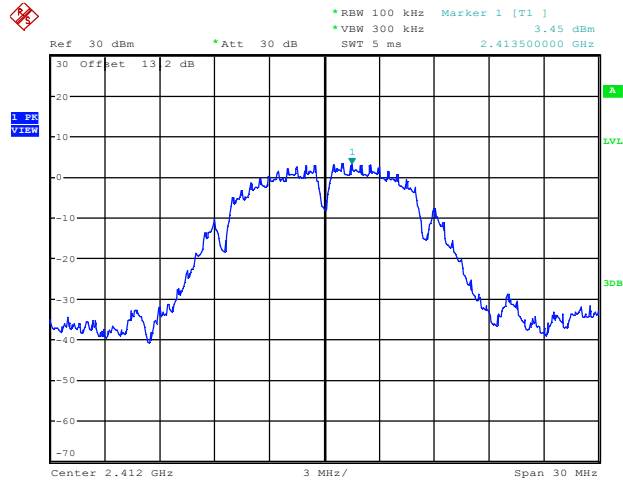
Appendix F: Conducted Spurious Emission

Test Result

TestMode	Antenna	Channel	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	3.45	3.45	---	PASS
			30~1000	30~1000	-48.44	<=-16.55	PASS
			1000~26500	1000~26500	<=-16.55	<=-16.55	PASS
		2437	Reference	3.39	3.39	---	PASS
			30~1000	30~1000	-48.16	<=-16.61	PASS
			1000~26500	1000~26500	-28.32	<=-16.61	PASS
		2442	Reference	-8.35	-8.35	---	PASS
			30~1000	30~1000	-48.27	<=-28.35	PASS
			1000~26500	1000~26500	-30.98	<=-28.35	PASS
		2462	Reference	2.76	2.76	---	PASS
			30~1000	30~1000	-47.39	<=-17.24	PASS
			1000~26500	1000~26500	-29.2	<=-17.24	PASS
		2472	Reference	-6.35	-6.35	---	PASS
			30~1000	30~1000	-48.35	<=-26.35	PASS
			1000~26500	1000~26500	-31.08	<=-26.35	PASS
11G	Ant1	2412	Reference	0.04	0.04	---	PASS
			30~1000	30~1000	-48.26	<=-19.96	PASS
			1000~26500	1000~26500	<=-19.96	<=-19.96	PASS
		2437	Reference	0.75	0.75	---	PASS
			30~1000	30~1000	-48.04	<=-19.25	PASS
			1000~26500	1000~26500	<=-19.25	<=-19.25	PASS
		2462	Reference	-1.86	-1.86	---	PASS
			30~1000	30~1000	-47.96	<=-21.86	PASS
			1000~26500	1000~26500	-30.57	<=-21.86	PASS
11N20SISO	Ant1	2412	Reference	-0.41	-0.41	---	PASS
			30~1000	30~1000	-48.13	<=-20.41	PASS
			1000~26500	1000~26500	<=-20.41	<=-20.41	PASS
		2437	Reference	0.05	0.05	---	PASS
			30~1000	30~1000	-47.46	<=-19.95	PASS
			1000~26500	1000~26500	<=-19.95	<=-19.95	PASS
		2462	Reference	-2.56	-2.56	---	PASS
			30~1000	30~1000	-47.45	<=-22.56	PASS
			1000~26500	1000~26500	-30.95	<=-22.56	PASS
11N40SISO	Ant1	2422	Reference	-6.41	-6.41	---	PASS
			30~1000	30~1000	-48.55	<=-26.41	PASS
			1000~26500	1000~26500	<=-26.41	<=-26.41	PASS
		2437	Reference	-6.35	-6.35	---	PASS
			30~1000	30~1000	-47.93	<=-26.35	PASS
			1000~26500	1000~26500	<=-26.35	<=-26.35	PASS
		2452	Reference	-6.25	-6.25	---	PASS
			30~1000	30~1000	-48.69	<=-26.25	PASS
			1000~26500	1000~26500	-30.91	<=-26.25	PASS

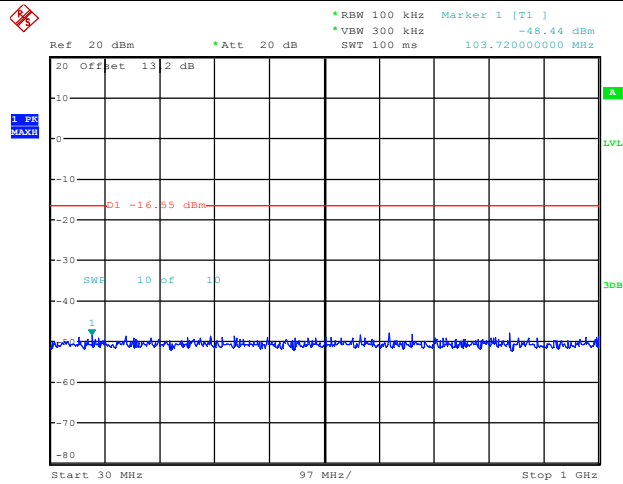
Test Graphs

11B_Ant1_2412_0~Reference



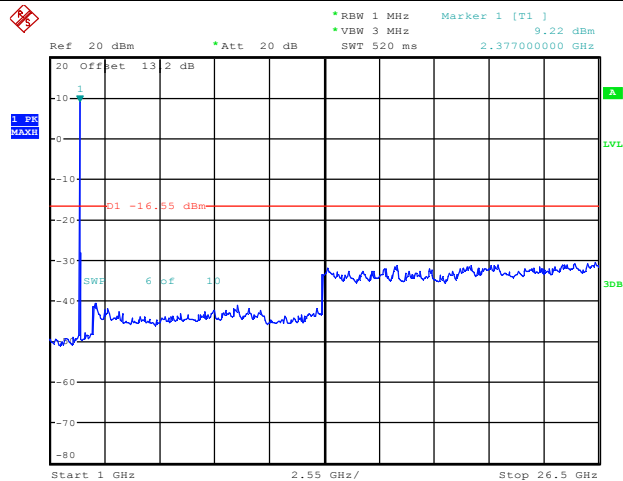
Date: 4.JUL.2020 15:14:40

11B_Ant1_2412_30~1000



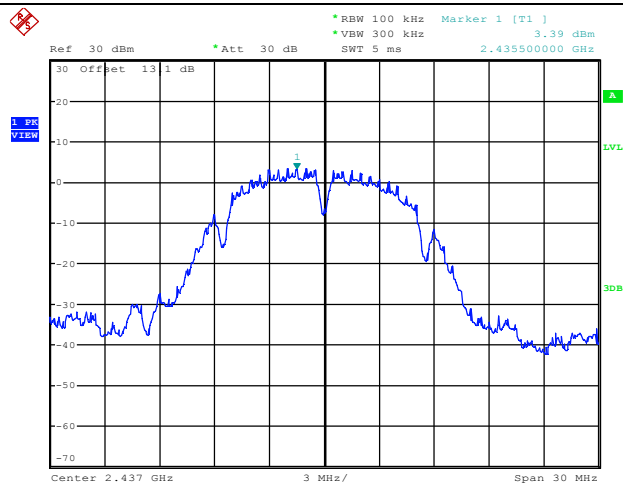
Date: 4.JUL.2020 15:14:51

11B_Ant1_2412_1000~26500



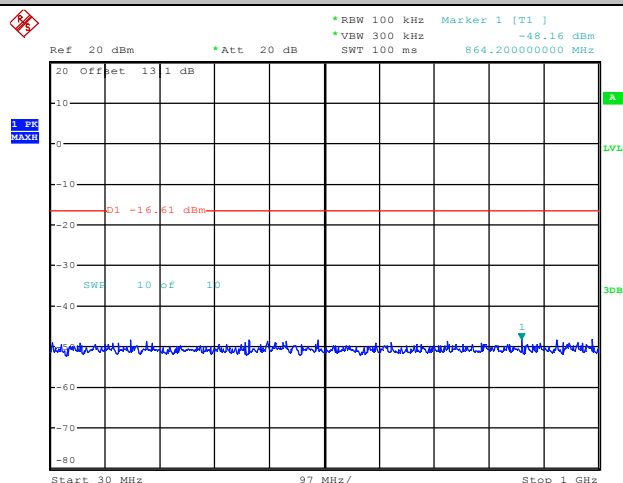
Date: 4.JUL.2020 15:15:06

11B_Ant1_2437_0~Reference



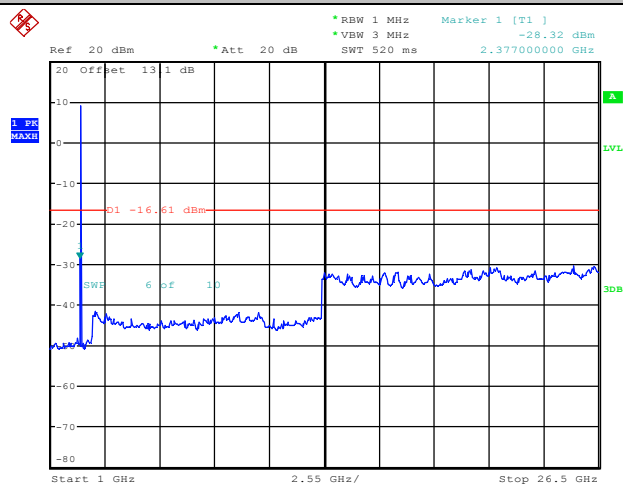
Date: 4.JUL.2020 15:18:10

11B_Ant1_2437_30~1000



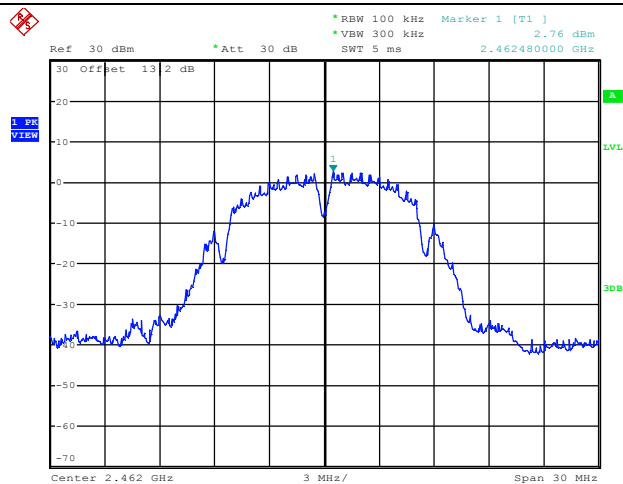
Date: 4.JUL.2020 15:18:21

11B_Ant1_2437_1000~26500



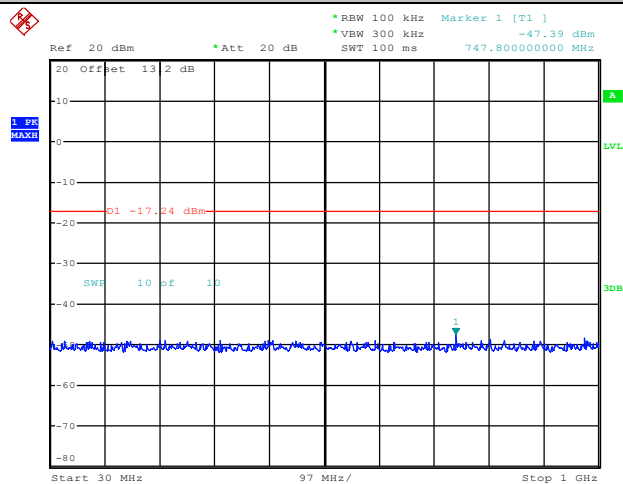
Date: 4.JUL.2020 15:18:35

11B_Ant1_2462_0~Reference



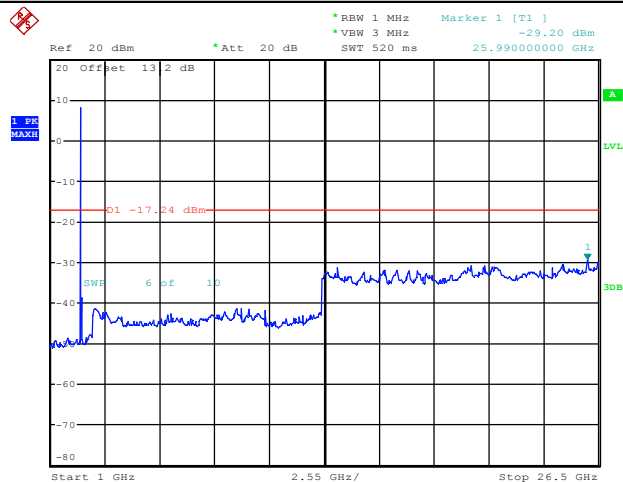
Date: 4.JUL.2020 15:23:53

11B_Ant1_2462_30~1000



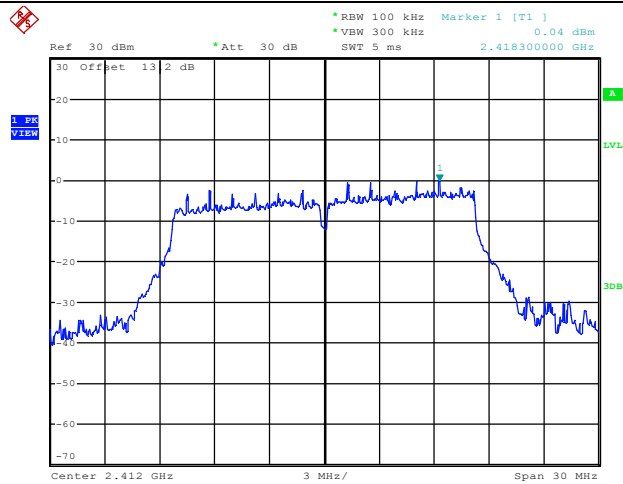
Date: 4.JUL.2020 15:24:04

11B_Ant1_2462_1000~26500



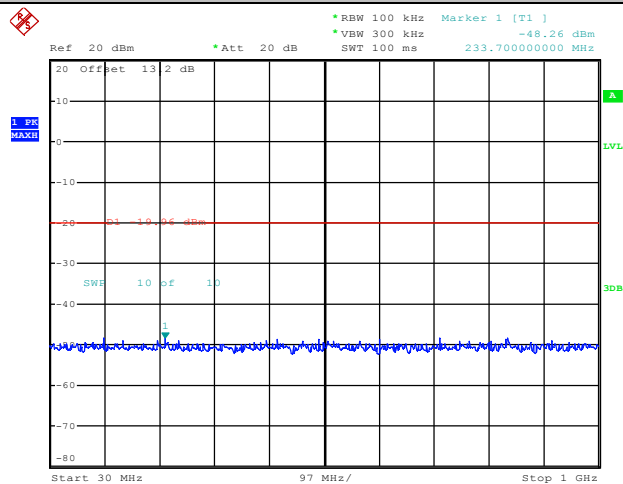
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11G_Ant1_2412_0~Reference



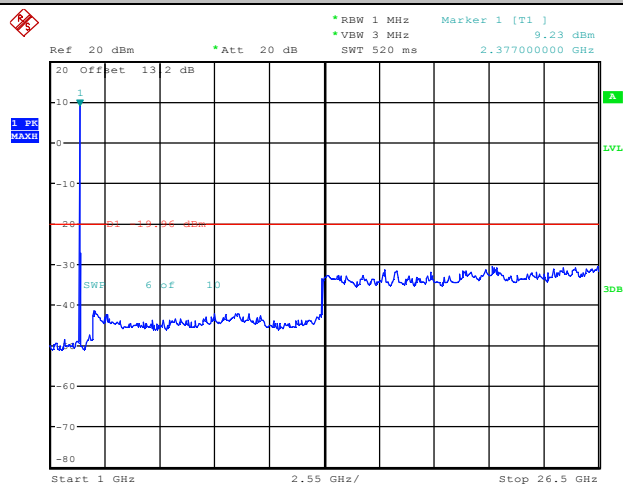
Date: 4.JUL.2020 16:20:11

11G_Ant1_2412_30~1000



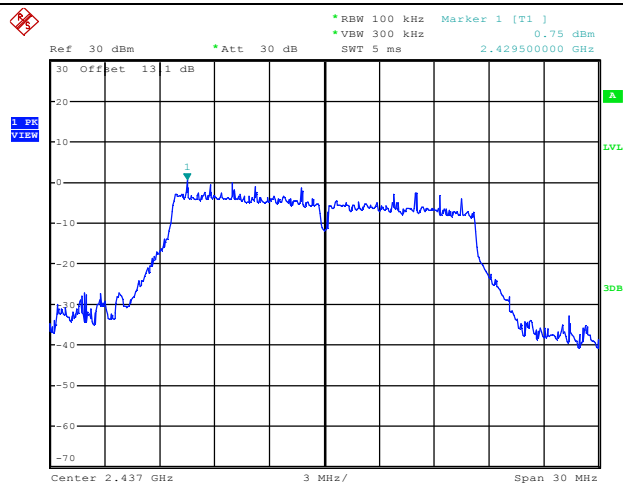
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11G_Ant1_2412_1000~26500



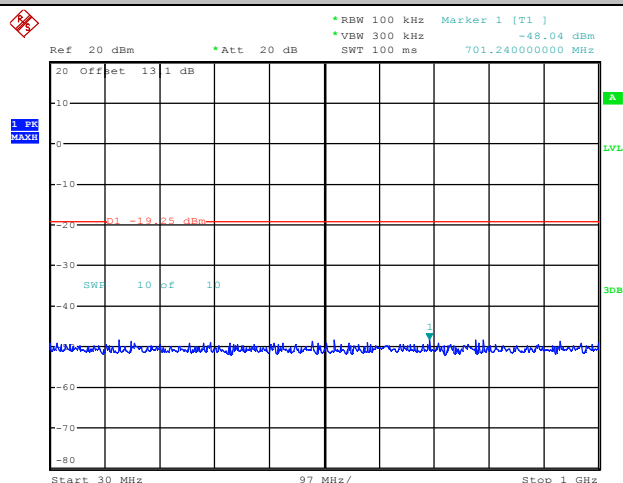
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11G_Ant1_2437_0~Reference



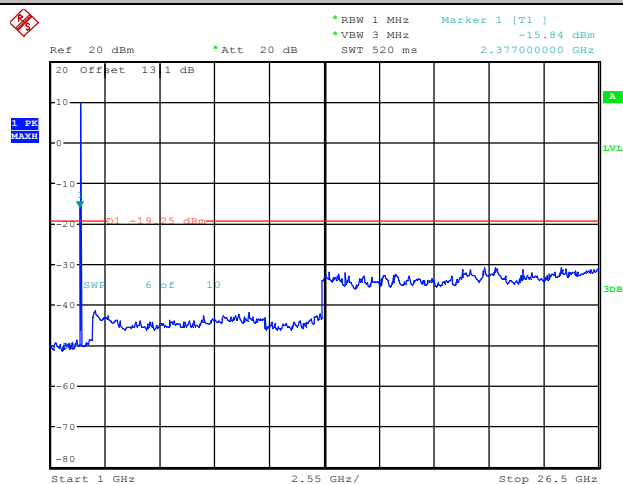
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11G_Ant1_2437_30~1000



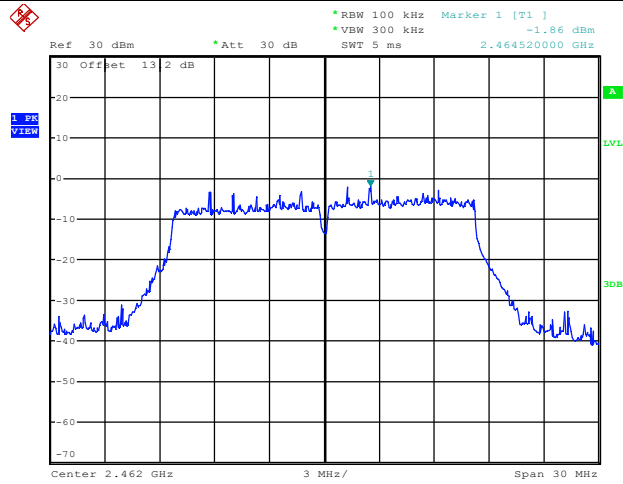
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11G_Ant1_2437_1000~26500



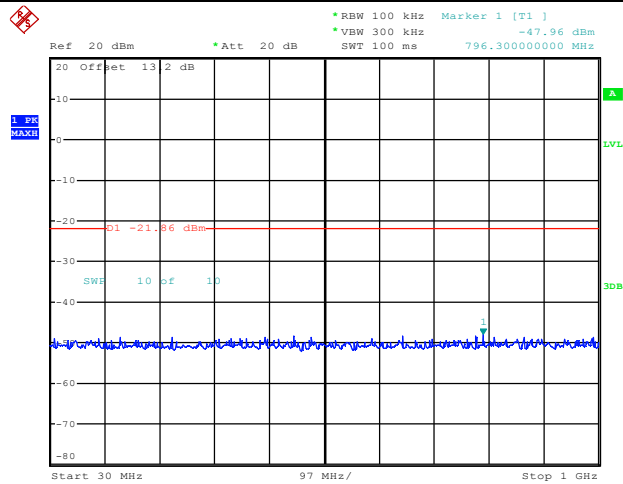
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11G_Ant1_2462_0~Reference



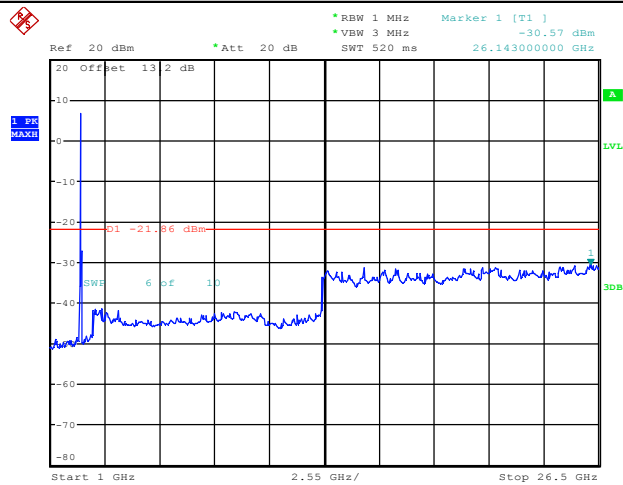
Date: 4.JUL.2020 16:25:02

11G_Ant1_2462_30~1000



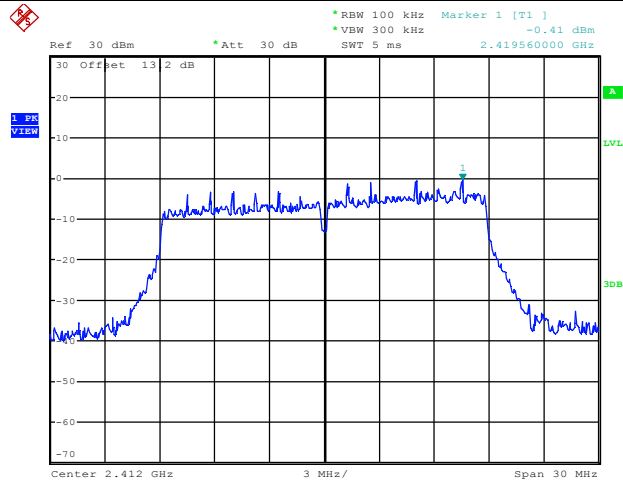
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11G_Ant1_2462_1000~26500



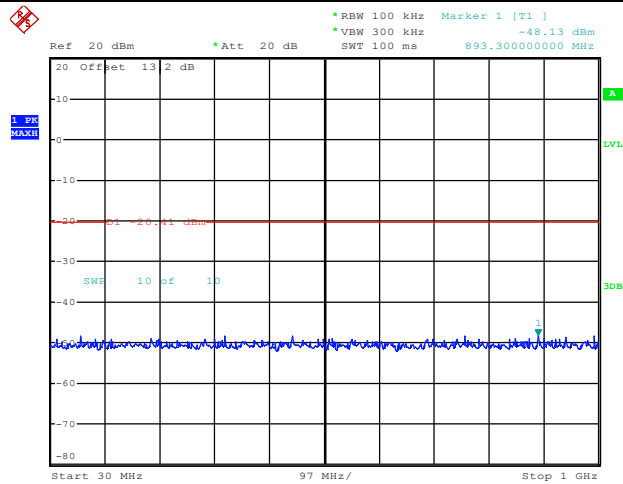
Date: 4.JUL.2020 16:25:28

11N20SISO_Ant1_2412_0~Reference



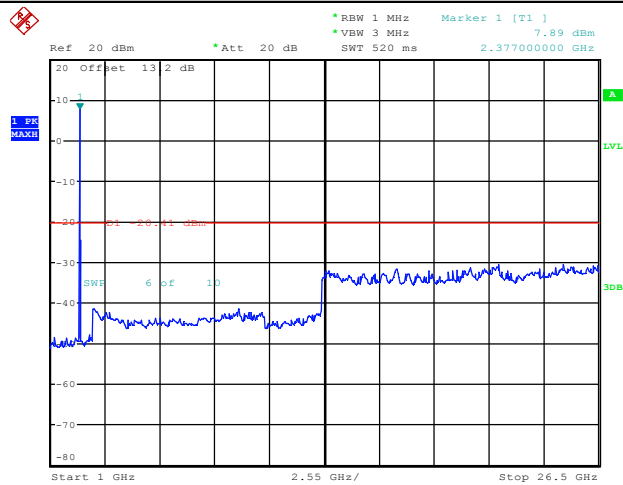
Date: 4.JUL.2020 16:34:29

11N20SISO_Ant1_2412_30~1000



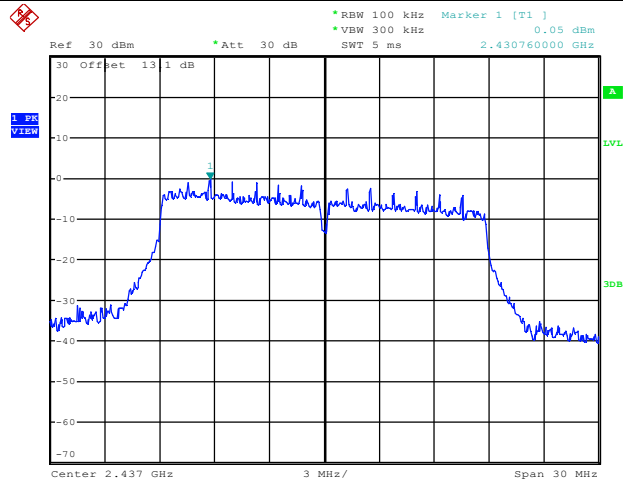
Date: 4.JUL.2020 16:34:40

11N20SISO_Ant1_2412_1000~26500



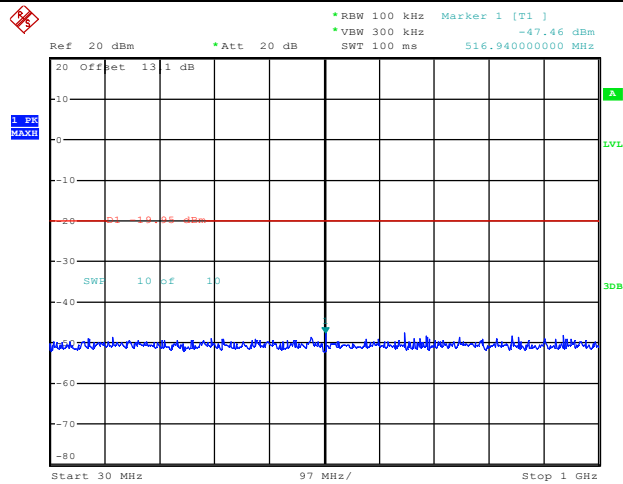
Date: 4.JUL.2020 16:34:54

11N20SISO_Ant1_2437_0~Reference



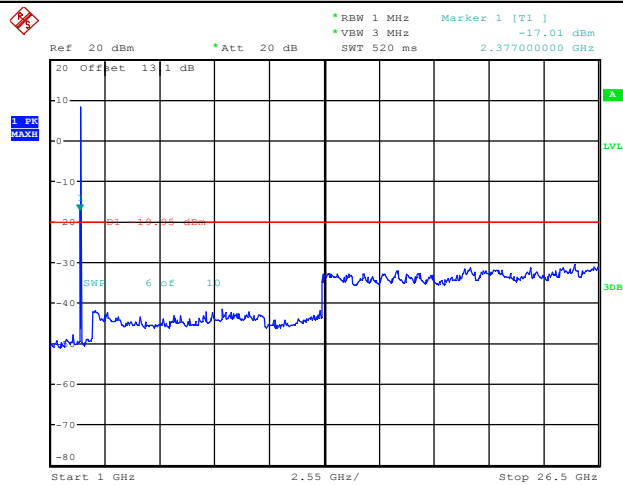
Date: 4.JUL.2020 16:36:12

11N20SISO_Ant1_2437_30~1000



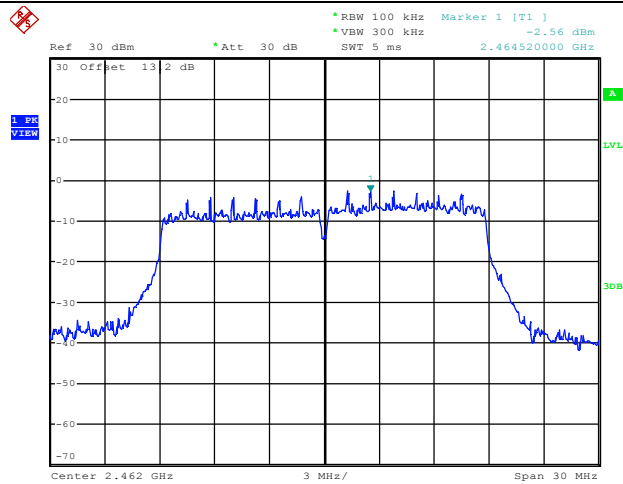
Date: 4.JUL.2020 16:36:22

11N20SISO_Ant1_2437_1000~26500



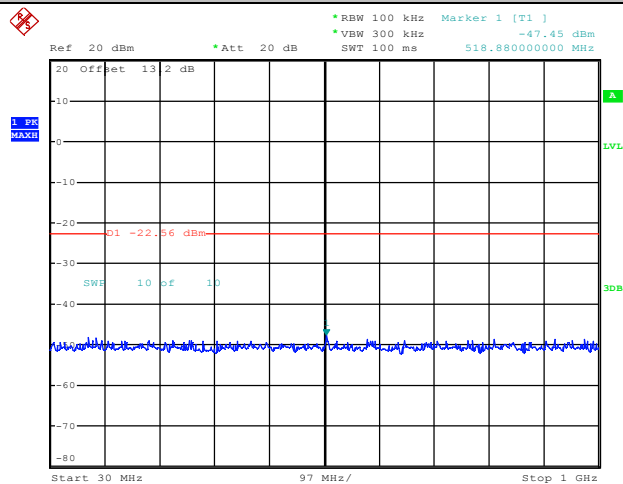
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11N20SISO_Ant1_2462_0~Reference



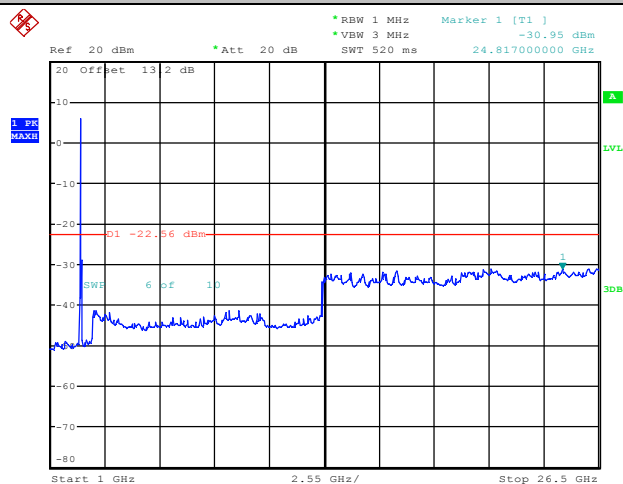
Date: 4.JUL.2020 16:39:53

11N20SISO_Ant1_2462_30~1000



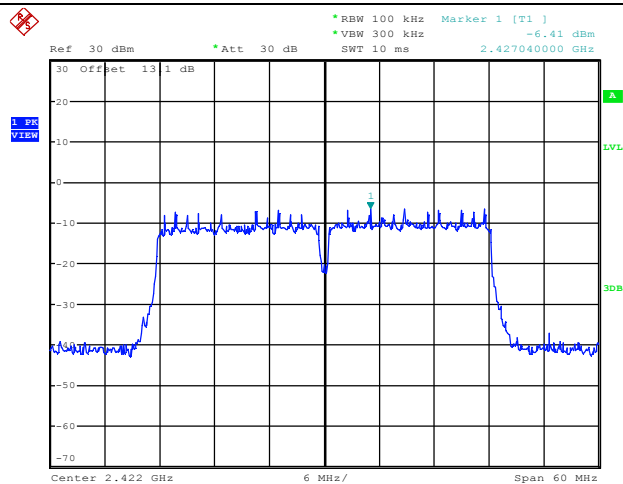
Date: 4.JUL.2020 16:40:04

11N20SISO_Ant1_2462_1000~26500



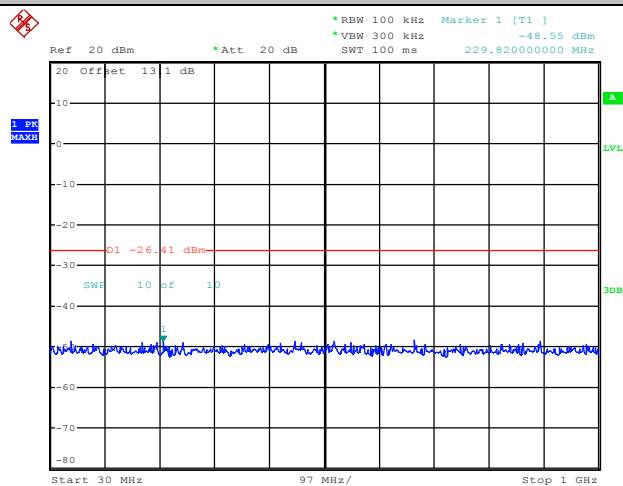
Date: 4.JUL.2020 16:40:19

11N40SISO_Ant1_2422_0~Reference



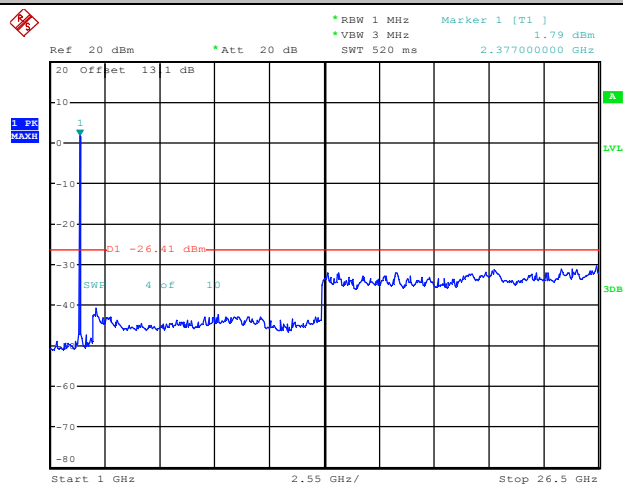
Date: 18.MAY.2020 12:04:04

11N40SISO_Ant1_2422_30~1000



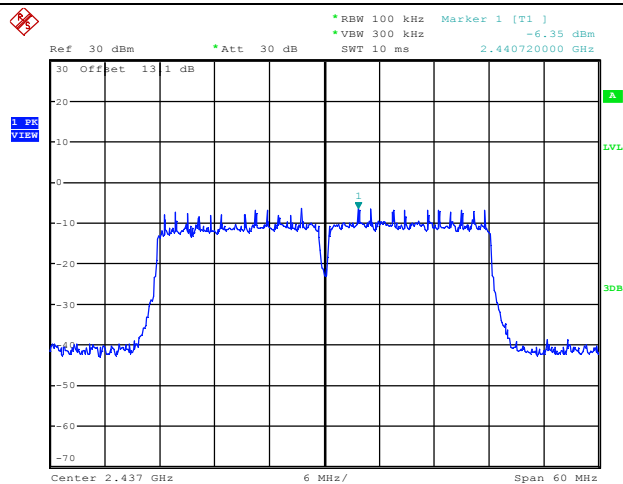
Date: 18.MAY.2020 12:04:15

11N40SISO_Ant1_2422_1000~26500



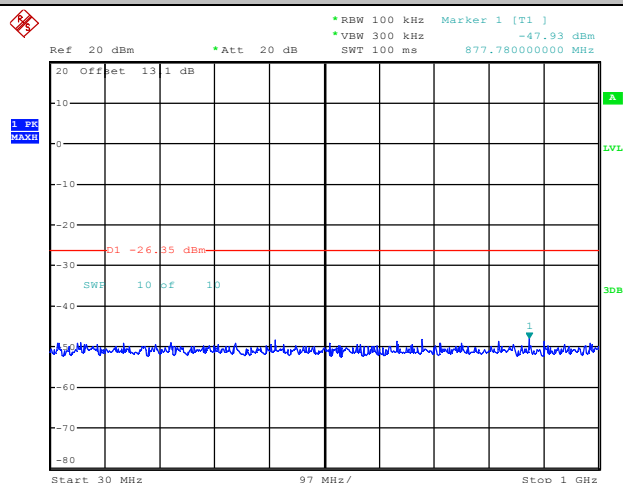
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11N40SISO_Ant1_2437_0~Reference



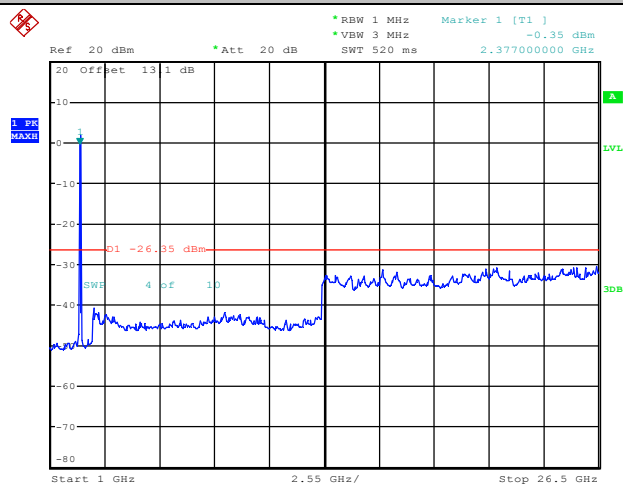
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11N40SISO_Ant1_2437_30~1000



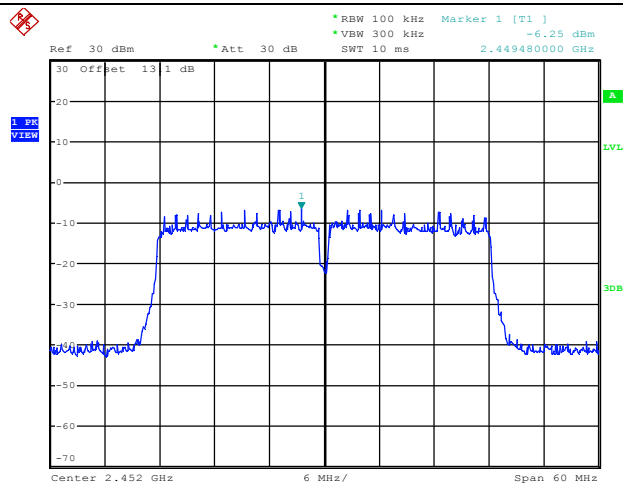
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11N40SISO_Ant1_2437_1000~26500



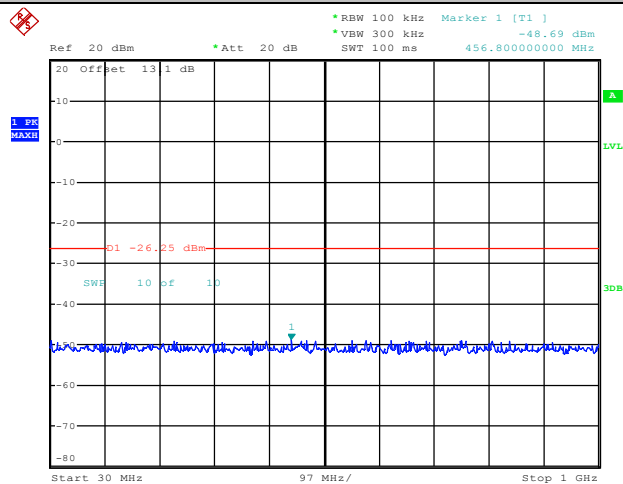
Date: 18.MAY.2020 12:06:01

11N40SISO_Ant1_2452_0~Reference



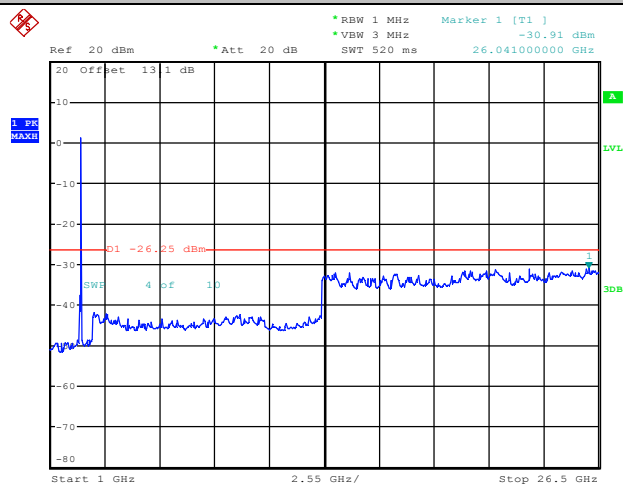
Date: 18.MAY.2020 12:09:08

11N40SISO_Ant1_2452_30~1000



Date: 18.MAY.2020 12:09:20

11N40SISO_Ant1_2452_1000~26500



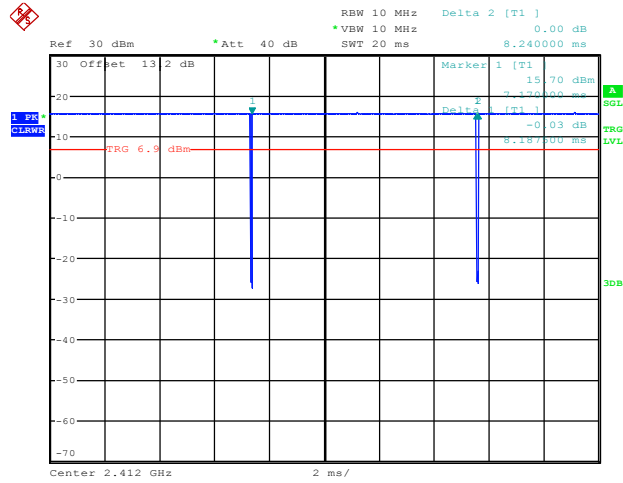
Date: 18.MAY.2020 12:09:35

Test Result

TestMode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Limit	Verdict
11B	Ant1	2412	8.19	8.24	99.36	---	PASS
		2437	8.19	8.23	99.48	---	PASS
		2442	8.19	8.23	99.50	---	PASS
		2462	8.19	8.23	99.48	---	PASS
		2472	8.19	8.23	99.48	---	PASS
11G	Ant1	2412	1.36	1.40	96.71	---	PASS
		2437	1.36	1.39	97.40	---	PASS
		2462	1.36	1.40	96.79	---	PASS
11N20SISO	Ant1	2412	1.27	1.31	97.13	---	PASS
		2437	1.27	1.33	95.22	---	PASS
		2462	1.27	1.31	97.22	---	PASS
11N40SISO	Ant1	2422	1.27	1.32	96.49	---	PASS
		2437	1.27	1.31	97.22	---	PASS
		2452	1.27	1.31	97.22	---	PASS

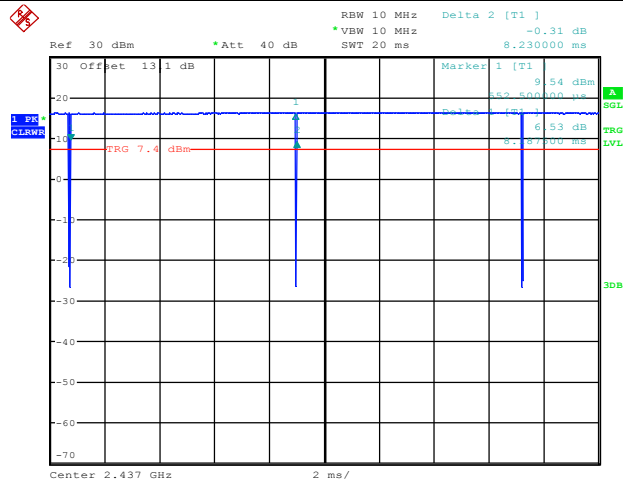
Test Graphs

11B_Ant1_2412



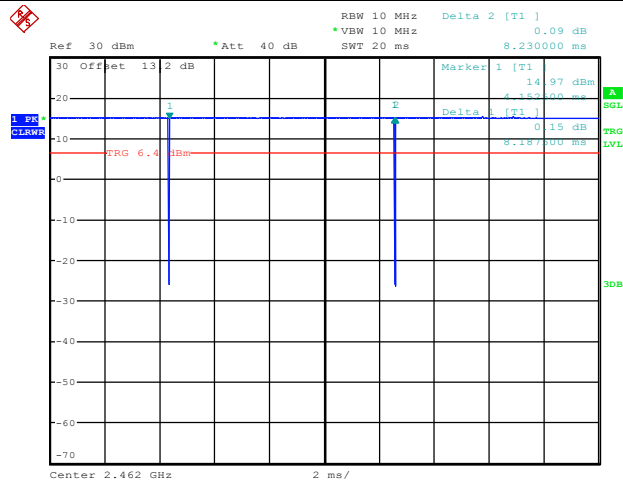
Date: 4.JUL.2020 15:11:26

11B_Ant1_2437



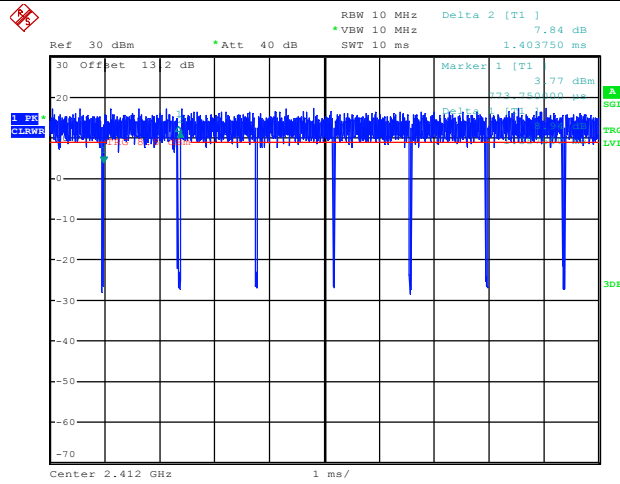
Date: 4.JUL.2020 15:16:55

11B_Ant1_2462



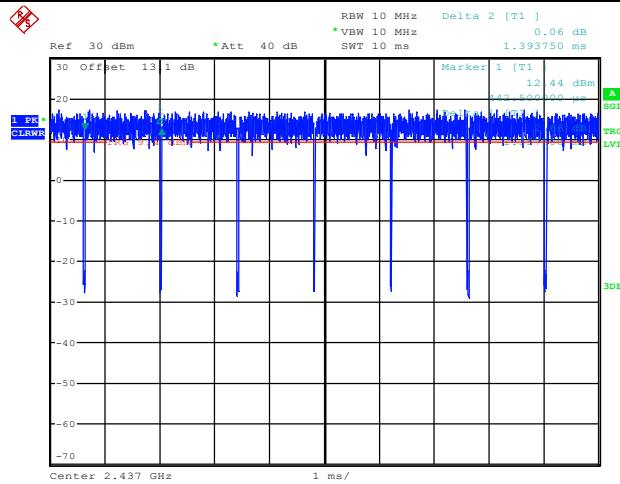
Date: 4.JUL.2020 15:20:39

11G_Ant1_2412



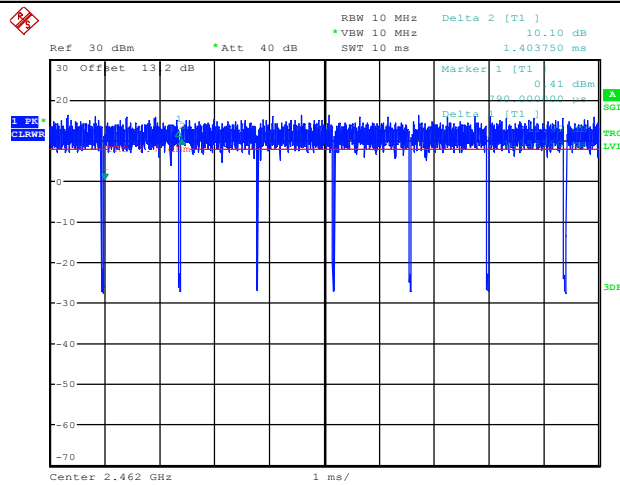
Date: 4.JUL.2020 15:25:35

11G_Ant1_2437



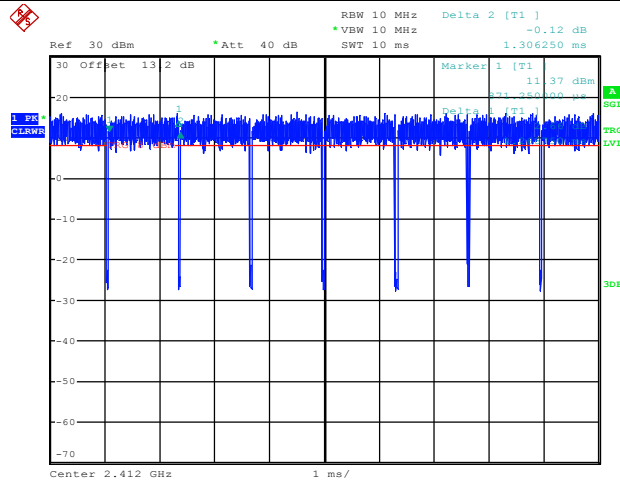
Date: 4.JUL.2020 15:30:20

11G_Ant1_2462



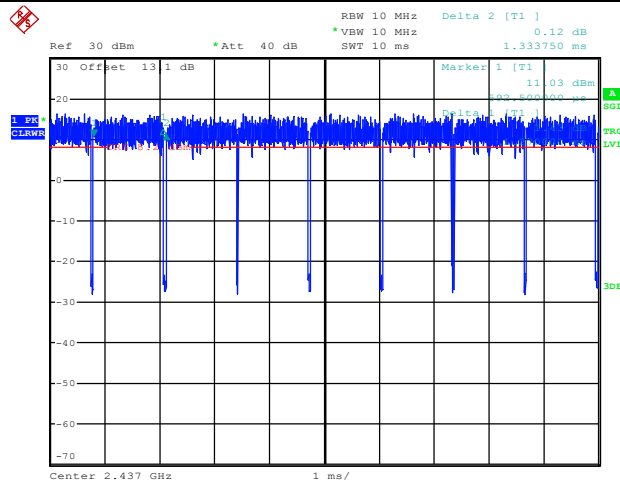
Date: 4.JUL.2020 15:34:31

11N20SISO_Ant1_2412



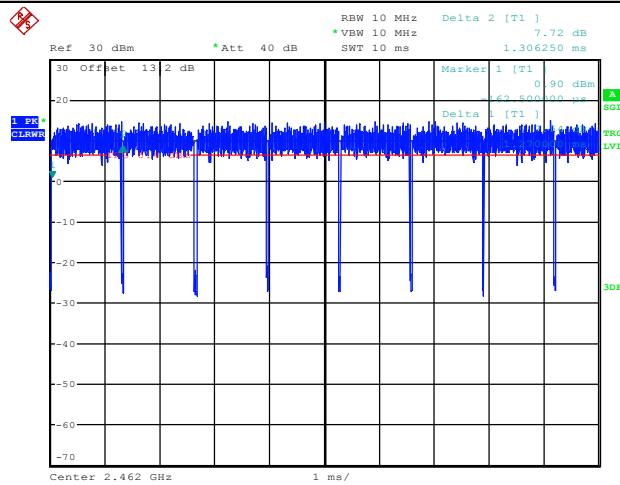
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11N20SISO_Ant1_2437



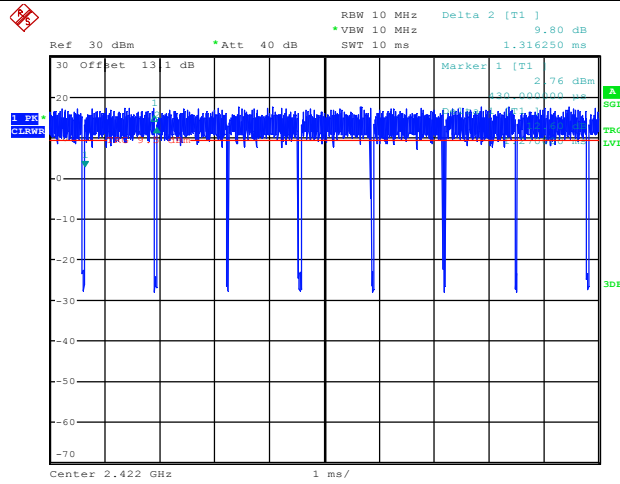
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11N20SISO_Ant1_2462



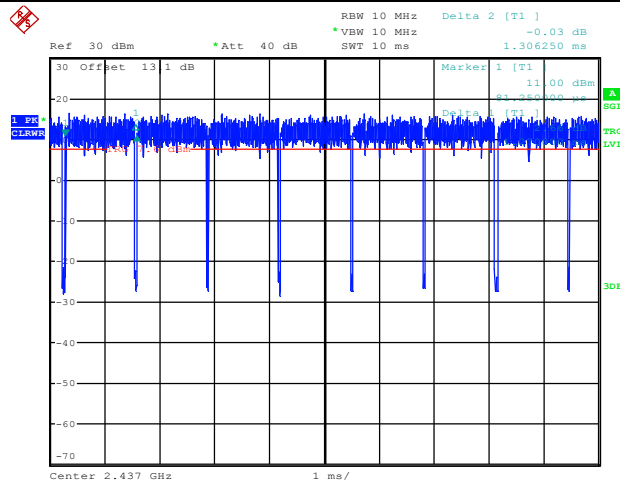
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11N40SISO_Ant1_2422



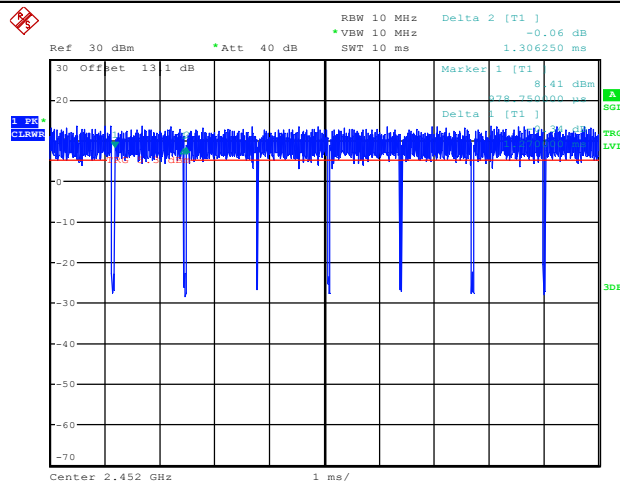
Date: 4.JUL.2020 15:56:04

11N40SISO_Ant1_2437



Date: 4.JUL.2020 16:03:26

11N40SISO_Ant1_2452



Date: 4.JUL.2020 16:06:51