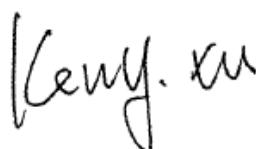


TEST REPORT

Application No.:	SZCR2501000164TL
Applicant:	UAB Teltonika Networks
Address of Applicant:	K. Baršausko st. 66, LT-51436, Kaunas, Lithuania
Manufacturer:	TELTONIKA NETWORKS, UAB
Address of Manufacturer:	K. Baršausko st. 66, LT-51436, Kaunas, Lithuania
Factory:	TELTONIKA EMS, UAB
Address of Factory:	Paluokesos st. 11, LT-33133, Molėtai, Lithuania
Equipment Under Test (EUT):	
EUT Name:	LTE Cat 6 Router (RUTX11), Ethernet Router (RUTX10)
Model No.:	RUTX11, RUTX10
♣	Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Trade Mark:	TELTONIKA
FCC ID:	2AET4RUTX11NA
Standard(s) :	47 CFR Part 15, Subpart E 15.407
Date of Receipt:	2025-01-10
Date of Test:	2025-01-23 to 2025-04-07
Date of Issue:	2025-04-07

Test Result:	Pass*
---------------------	--------------

* In the configuration tested, the EUT complied with the standards specified above.



Keny Xu

EMC Laboratory Manager

SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch Testing & EMC Laboratory

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SZEMC-TRF-01 Rev. A/1

Report No.: SZCR250100016404

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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2025-04-07		Original

Authorized for issue by:			
		Charlie Dai	
		Charlie Dai/Project Engineer	
		Eric Fu	
		Eric Fu/Reviewer	

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2 Test Summary

Radio Spectrum Technical Requirement				
Item	Standard	Method	Requirement	Result
Antenna Requirement	47 CFR Part 15, Subpart E 15.407	N/A	47 CFR Part 15, Subpart C 15.203	Pass
Transmission in the Absence of Data		N/A	47 CFR Part 15, Subpart E 15.407 (c)	Pass

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart E 15.407	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207 & Subpart E 15.407 b(9)	Pass
Maximum Conducted output power		ANSI C63.10 (2013) Section 12.3	47 CFR Part 15, Subpart E 15.407 (a)	Pass
Radiated Emissions (Below 1GHz)		ANSI C63.10 (2013) Section 6.4,6.5	47 CFR Part 15, Subpart C 15.209 & Subpart E 15.407(b)	Pass
Radiated Emissions (Above 1GHz)		ANSI C63.10 (2013) Section 6.6	47 CFR Part 15, Subpart C 15.209 & Subpart E 15.407(b)	Pass
Radiated Emissions which fall in the restricted bands		ANSI C63.10 (2013) Section 6.10.5	47 CFR Part 15, Subpart C 15.209 & Subpart E 15.407(b)	Pass
Channel Move Time		KDB 905462 D02 Section 7.8.3	KDB 905462 D02 Section 5.1	Pass
Duty Cycle		ANSI C63.10 (2013) Section 12.2	ANSI C63.10 (2013) Section 12.2	Pass
99% Bandwidth		ANSI C63.10 (2013) Section 12.4.2	ANSI C63.10 (2013) Section 12.4.2	Pass
26dB Emission bandwidth		ANSI C63.10 (2013) Section 12.4.1	47 CFR Part 15, Subpart E 15.407 (a)	Pass
Minimum 6 dB bandwidth (5.725-5.85 GHz band)		ANSI C63.10 (2013) Section 6.9.2	47 CFR Part 15, Subpart E 15.407 (e)	Pass
Peak Power spectrum density		ANSI C63.10 (2013) Section 12.5	47 CFR Part 15, Subpart E 15.407 (a)	Pass
Frequency Stability		ANSI C63.10 (2013) Section 6.8	47 CFR Part 15, Subpart E 15.407 (g)	Pass
Non-occupancy period		KDB 905462 D02 Section 7.8.3	KDB 905462 D02 Section 5.1	Pass
Channel Availability Check Time		KDB 905462 D02 Section 7.8.2	KDB 905462 D02 Section 5.1	Pass

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Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
Channel Closing Transmission Time		KDB 905462 D02 Section 7.8.3	KDB 905462 D02 Section 5.1	Pass
U-NII Detection Bandwidth		KDB 905462 D02 Section 7.8.1	KDB 905462 D02 Section 5.1	Pass

Declaration of EUT Family Grouping:

Model No.: RUTX11, RUTX10

Only the model RUTX11 was tested, since according to the declaration from the applicant, the electrical circuit design, PCB layout, components used, internal wiring and functions were identical for all the above models, with only difference on RUTX10 – without top PCB, without mobile functionality.

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4 General Information**4.1 Details of E.U.T.**

Power supply:	Power by switching adapter Model No.: ASSA13A-120150 Input: AC 100-240V, 50/60Hz, 0.6A Output: DC 12V, 1.5A, 18W
Cable(s):	RUTX10: DC cable from Adapter 200cm unshielded; LAN cable 156cm unshielded; 2 pcs WIFI antenna 9.5cm shielded; 1 pcs BT antenna 150cm unshielded. RUTX11: DC cable from Adapter 200cm unshielded; LAN cable 156cm unshielded; 2 pcs Mobile antenna 9.5cm shielded; 1 pcs GPS antenna 295cm unshielded; 2 pcs WIFI antenna 9.5cm shielded; 1 pcs BT antenna 150cm unshielded.
Operation Frequency/Number of channels (20MHz):	5180-5240MHz (4 Channels); U-NII-2A: 5260-5320MHz (4 Channels); U-NII-2C: 5500-5700MHz (11 Channels); U-NII-3: 5745-5825MHz (5 Channels)
Operation Frequency/Number of channels/(40MHz):	5190-5230MHz (2 Channels); U-NII-2A: 5270-5310MHz (2 Channels); U-NII-2C: 5510-5670MHz (5 Channels); U-NII-3: 5755-5795MHz (2 Channels)
Operation Frequency/Number of channels (80MHz):	5210MHz (1 Channel); U-NII-2A: 5290MHz (1 Channels); U-NII-2C: 5530-5610MHz (2 Channels); U-NII-3: 5775MHz (1 Channel)
Modulation Type:	OFDM (64QAM, 16QAM, QPSK, BPSK); 802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM); 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Channel Spacing:	802.11a/n/ac 20: 20MHz; 802.11n/ac 40: 40MHz; 802.11ac 80: 80MHz
DFS Function:	Master / Slave
TPC Function:	Support TPC function
Antenna Type:	SMA Dipole Antenna
Antenna Gain:	ANT1 & ANT2: 3.5dBi
Cable Loss (for RF conducted test):	1.0dB

Remark 1: The information in this section is provided by the applicant or manufacturer, SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.

Remark 2: The master and the client have the same power configuration. Both aspects are taken into account.



4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
--	--	--	--

The EUT has been tested as an independent unit.

4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Emissions at AC Power Line (150kHz-30MHz)	± 3.1dB
Maximum Conducted output power	± 0.75dB
Radiated Emissions (Below 1GHz)	± 6.0dB for 3m; ± 5.0dB for 10m
Radiated Emissions (Above 1GHz)	± 4.6dB (1-18GHz);± 4.8dB (18-40GHz)
Radiated Emissions which fall in the restricted bands	± 6.0dB (below 1GHz); ± 4.6dB (above 1GHz);
Duty Cycle	± 0.37%
99% Bandwidth	± 3%
26dB Emission bandwidth	± 3%
Minimum 6 dB bandwidth (5.725-5.85 GHz band)	± 3%
Peak Power spectrum density	± 2.84dB
Frequency Stability	± 7.25 x 10 ⁻⁸

Remark:

The U_{lab} (lab Uncertainty) is less than $U_{cispr/ETSI}$ (CISPR/ETSI Uncertainty), so the test results
– compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
– non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

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4.4 Test Location

All tests were performed at:

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Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

4.5 Test Facility

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

- **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

- **VCCI (Member No. 1937)**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd.

Shenzhen EMC laboratory have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

- **FCC –Designation Number: CN1336**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1336. Test Firm Registration Number: 787754.

- **Innovation, Science and Economic Development Canada**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

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5 Equipment List

Conducted Emissions at AC Power Line (150kHz-30MHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Shielding Room	ZhongYu Electron	GB-88	SEM001-06	2022-05-14	2025-05-13
EMI Test Receiver	Rohde&Schwarz	ESR	SZ-WRG-M-047	2025-01-08	2026-01-07
Matching Pad	N/A	N/A	SEM021-23	2024-03-20 2025-03-19	2025-03-19 2026-03-18
Matching Pad	N/A	N/A	SEM021-24	2024-03-20 2025-03-19	2025-03-19 2026-03-18
Measurement Software	AUDIX	e3 V8.2014-6-27a	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM024-01	2024-07-06	2025-07-05
LISN	Rohde&Schwarz	ENV216	SEM007-01	2024-08-15	2025-08-14
LISN	ETS-LINDGREN	3816/2	SEM007-02	2024-03-14 2025-03-03	2025-03-13 2026-03-02

Maximum Conducted output power					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Power Sensor	TST PASS	TSPS2023R	SEM009-26	2024-03-27 2025-03-04	2025-03-26 2026-03-03
Power Sensor	KEYSIGHT	U2021XA	SEM009-16	2024-03-14 2025-03-04	2025-03-13 2026-03-03
DC Power Supply	Chroma	62012P-80-60	SEM011-11	2024-08-14	2025-08-13
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-19	2024-03-14 2025-03-04	2025-03-13 2026-03-03
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2024-09-14	2025-09-13
Measurement Software	TST PASS	TST PASS V2.0	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2024-07-06	2025-07-05
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2024-03-27 2025-03-03	2025-03-26 2026-03-02
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2024-03-19 2025-02-26	2025-03-18 2026-02-25



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Radiated Emissions (Below 1GHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Loop Antenna	ETS-Lindgren	6502	SEM003-08	2023-11-20	2025-11-19
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2023-06-19	2026-06-18
MXE EMI Receiver	Agilent Technologies	N9038A	SEM004-15	2024-08-14	2025-08-13
BiConiLog Antenna	ETS-LINDGREN	3142C	SEM003-01	2023-09-16	2025-09-15
Pre-Amplifier	Agilent Technologies	8447D	SEM005-01	2024-03-14 2025-03-04	2025-03-13 2026-03-03
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2024-07-06	2025-07-05

Radiated Emissions (Above 1GHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Signal & Spectrum Analyzer	Rohde & Schwarz	FSV	SZ-WRG-M-048	2025-01-07	2026-01-06
Low Noise Amplifier 1G-18GHz	Tonscend	TAP01018050	SZ-WRG-M-051	2025-01-07	2026-01-06
Low Noise Amplifier 18G-40GHz	Tonscend	TAP18040048	SZ-WRG-M-052	2025-01-08	2026-01-07
Double Ridge Horn Antenna 1GHz-18GHz	SCHWARZBECK	BBHA 9120 D	SZ-WRG-M-055	2023-12-21	2025-12-20
SHF-EHF Horn 15GHz-40GHz	SCHWARZBECK	BBHA 9170	SZ-WRG-M-056	2023-12-25	2025-12-24
RSE Test Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Chamber	CRTSGSSAC966	N/A	SZ-WRG-C-063	2025-01-06	2028-01-05
Humidity and Temperature Indicator	deli	8838	SEM002-46	2024-07-24	2025-07-23

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Radiated Emissions which fall in the restricted bands					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Signal & Spectrum Analyzer	Rohde & Schwarz	FSV	SZ-WRG-M-048	2025-01-07	2026-01-06
Low Noise Amplifier 30M-8GHz	Tonscend	TAP30M8G30	SZ-WRG-M-050	2025-01-07	2026-01-06
Double Ridge Horn Antenna 1GHz-18GHz	SCHWARZBECK	BBHA 9120 D	SZ-WRG-M-055	2023-12-21	2025-12-20
SHF-EHF Horn 15GHz-40GHz	SCHWARZBECK	BBHA 9170	SZ-WRG-M-056	2023-12-25	2025-12-24
RSE Test Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Chamber	CRTSGSSAC966	N/A	SZ-WRG-C-063	2025-01-06	2028-01-05
Humidity and Temperature Indicator	deli	8838	SEM002-46	2024-07-24	2025-07-23

Channel Move Time					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Manual Step Attenuator	KEYSIGHT	8494B	SEM021-05	2024-03-27 2025-03-03	2025-03-26 2026-03-02
Manual Step Attenuator	KEYSIGHT	8496B	SEM021-06	2024-03-27 2025-03-03	2025-03-26 2026-03-02
Measurement Software	KEYSIGHT	Signal Studio for DFS Radar Profiles V2.2.0.0	N/A	N/A	N/A
Measurement Software	Agilent	ISMonitor10	N/A	N/A	N/A
MXG Vector Signal Generator	Agilent	N5182A	SEM006-21	2024-03-14 2025-03-03	2025-03-13 2026-03-02
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-22	2024-03-14 2025-03-04	2025-03-13 2026-03-03

RF Conducted Test					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
DC Power Supply	Chroma	62012P-80-60	SEM011-11	2024-08-14	2025-08-13
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-19	2024-03-14 2025-03-04	2025-03-13 2026-03-03
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2024-09-14	2025-09-13
Measurement Software	TST PASS	TST PASS V2.0	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2024-07-06	2025-07-05

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Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2024-03-27 2025-03-03	2025-03-26 2026-03-02
Programmable Temperature & Humidity Chamber	Votsch Industrietechnik GmbH	VT 4002	SEM002-15	2024-03-19 2025-02-26	2025-03-18 2026-02-25
Manual Step Attenuator	KEYSIGHT	8494B	SEM021-05	2024-03-30 2025-03-03	2025-03-29 2026-03-02
Manual Step Attenuator	KEYSIGHT	8496B	SEM021-06	2024-03-30 2025-03-03	2025-03-29 2026-03-02
MXG Vector Signal Generator	Agilent	N5182A	SEM006-21	2024-03-14 2025-03-03	2025-03-13 2026-03-02
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-22	2024-03-14 2025-03-04	2025-03-13 2026-03-03

General used equipment					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Humidity/ Temperature Indicator	deli	8838	SEM002-32	2024-07-24	2025-07-23
Humidity/ Temperature Indicator	deli	8838	SEM002-33	2024-07-24	2025-07-23
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2024-03-18 2025-03-03	2025-03-17 2026-03-02

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6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203

6.1.2 Conclusion

15.203 requirement:

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, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

EUT Antenna:

The antenna is a detachable antenna with RP-SMA connector. The best case gain of the antenna is ANT1 & ANT2: 3.5dBi.

Antenna location: Refer to external photos



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6.2 Transmission in the Absence of Data

6.2.1 Test Requirement:

47 CFR Part 15, Subpart E 15.407 (c)

6.2.2 Conclusion

Standard Requirement:

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signalling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals.

Applicants shall include in their application for equipment authorization a description of how this requirement is met.

EUT Details:

WIFI chip support automatically discontinue transmission in case of either absence of information to transmit or operational failure, if the chip detect absence of information to transmit or operational failure, it will be automatically shut off.

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7 Radio Spectrum Matter Test Results

7.1 Conducted Emissions at AC Power Line (150kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart C 15.207 & Subpart E 15.407 b(9)

Test Method: ANSI C63.10 (2013) Section 6.2

Limit:

Frequency of emission(MHz)	Conducted limit(dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 22.5 °C Humidity: 44.5 % RH Atmospheric Pressure: 1020 mbar

7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	04	TX mode (U-NII-1) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Pre-scan	05	TX mode (U-NII-2A) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Pre-scan	06	TX mode (U-NII-2C) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Pre-scan	07	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.

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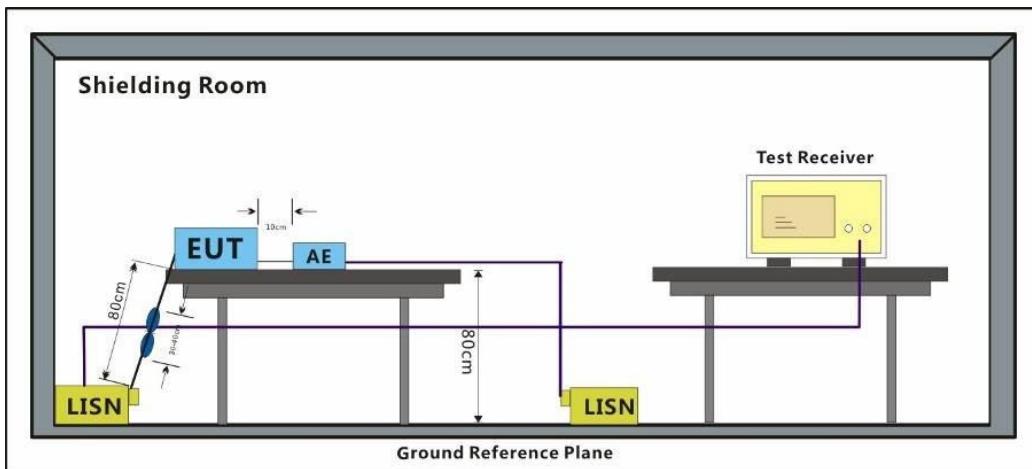
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7.1.3 Test Setup Diagram



7.1.4 Measurement Procedure and Data

- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50 μ H + 5ohm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
- 5) 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 on conducted measurement.

Remark: Level=Read Level+ Cable Loss+ LISN Factor



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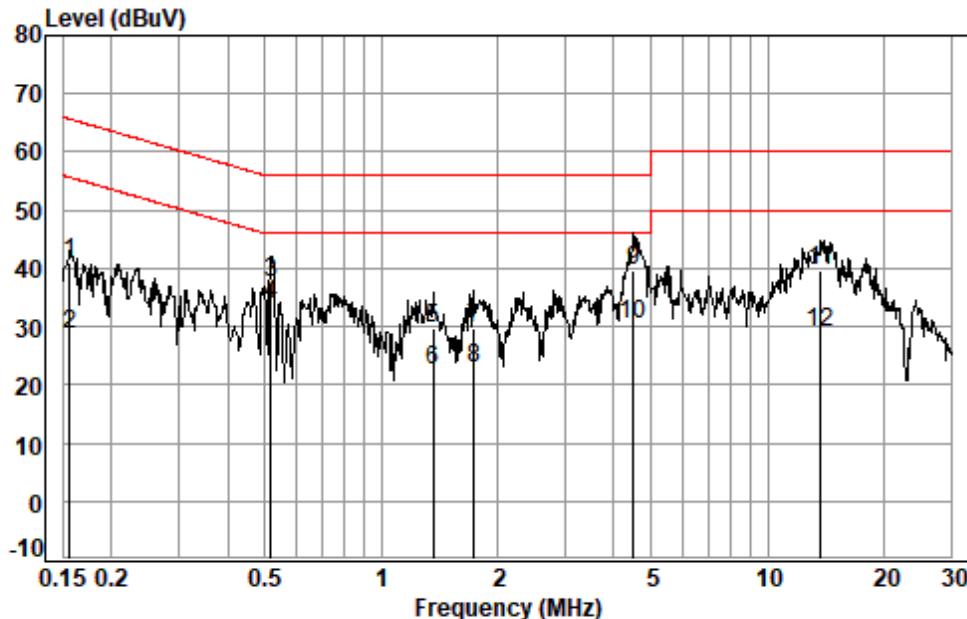
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Test Mode: 04; Line: Live line



Site : Shielding Room
 Condition: Line
 Job No. : 00164TL/00165TL
 Test mode: 04 RUTX11

	Freq	Cable	LISN	Read	Limit	Over	Remark
		Loss	Factor	Level	Level	Line	
	MHz	dB	dB	dBuV	dBuV	dBuV	dB
1	0.1565	0.06	10.18	30.87	41.11	65.65	-24.54 QP
2	0.1565	0.06	10.18	18.40	28.64	55.65	-27.01 Average
3	0.5182	0.08	9.55	28.05	37.68	56.00	-18.32 QP
4 *	0.5182	0.08	9.55	24.27	33.90	46.00	-12.10 Average
5	1.3665	0.10	9.58	20.09	29.77	56.00	-26.23 QP
6	1.3665	0.10	9.58	12.83	22.51	46.00	-23.49 Average
7	1.7345	0.10	9.58	19.91	29.59	56.00	-26.41 QP
8	1.7345	0.10	9.58	13.16	22.84	46.00	-23.16 Average
9 *	4.5015	0.12	9.66	29.85	39.63	56.00	-16.37 QP
10	4.5015	0.12	9.66	20.63	30.41	46.00	-15.59 Average
11	13.6952	0.25	9.87	29.64	39.76	60.00	-20.24 QP
12	13.6952	0.25	9.87	19.04	29.16	50.00	-20.84 Average

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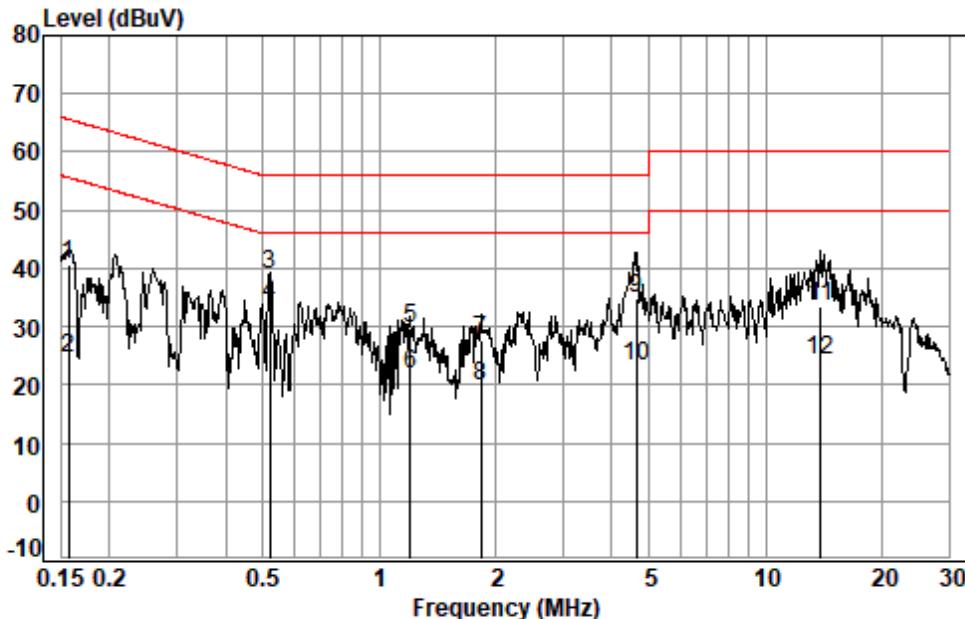
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Test Mode: 04; Line: Neutral Line



Site : Shielding Room

Condition: Neutral

Job No. : 00164TL/00165TL

Test mode: 04 RUTX11

	Freq	Cable	LISN	Read	Limit	Over	Remark
		Freq	Loss	Factor			
	MHz	dB	dB	dBuV	dBuV	dBuV	dB
1	0.1573	0.06	10.14	30.61	40.81	65.60	-24.79 QP
2	0.1573	0.06	10.14	14.23	24.43	55.60	-31.17 Average
3 *	0.5210	0.08	9.70	29.20	38.98	56.00	-17.02 QP
4 *	0.5210	0.08	9.70	24.13	33.91	46.00	-12.09 Average
5	1.2034	0.09	9.54	20.06	29.69	56.00	-26.31 QP
6	1.2034	0.09	9.54	12.07	21.70	46.00	-24.30 Average
7	1.8288	0.10	9.55	17.96	27.61	56.00	-28.39 QP
8	1.8288	0.10	9.55	10.05	19.70	46.00	-26.30 Average
9	4.6223	0.12	9.56	25.15	34.83	56.00	-21.17 QP
10	4.6223	0.12	9.56	13.54	23.22	46.00	-22.78 Average
11	13.9146	0.25	9.80	23.32	33.37	60.00	-26.63 QP
12	13.9146	0.25	9.80	14.09	24.14	50.00	-25.86 Average

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7.2 Maximum Conducted output power

Test Requirement 47 CFR Part 15, Subpart E 15.407 (a)

Test Method: ANSI C63.10 (2013) Section 12.3

Limit:

Frequency band(MHz)	Limit
5150-5250	$\leq 1W(30dBm)$ for master device
	$\leq 250mW(24dBm)$ for client device
5250-5350	$\leq 250mW(24dBm)$ or $11dBm+10\log B^*$
5470-5725	$\leq 250mW(24dBm)$ or $11dBm+10\log B^*$
5725-5850	$\leq 1W(30dBm)$
Remark:	<p>* Where B is the 26dB emission bandwidth in MHz.</p> <p>The maximum conducted output power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.</p>

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22.6 °C Humidity: 43.1 % RH Atmospheric Pressure: 1020 mbar

7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	04	TX mode (U-NII-1) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	05	TX mode (U-NII-2A) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	06	TX mode (U-NII-2C) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.

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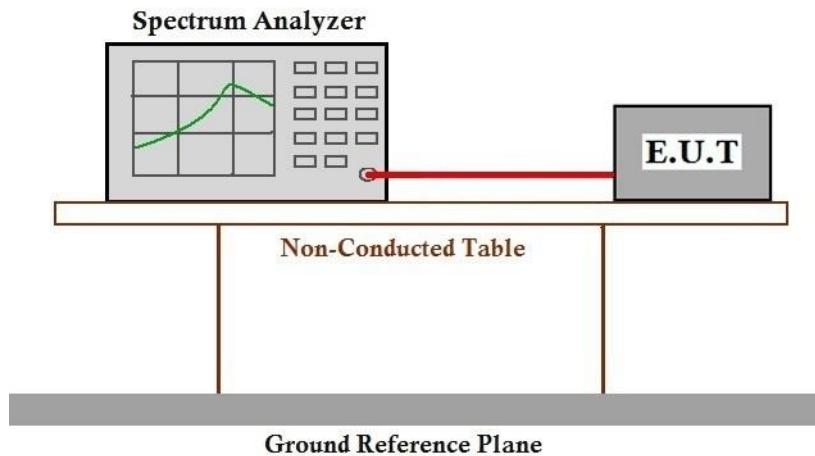


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Final test	07	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
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7.2.3 Test Setup Diagram



7.2.4 Measurement Procedure and Data

Please Refer to Appendix for Details

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7.3 Radiated Emissions (Below 1GHz)

Test Requirement 47 CFR Part 15, Subpart C 15.209 & Subpart E 15.407(b)

Test Method: ANSI C63.10 (2013) Section 6.4,6.5

Measurement Distance: 3m

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
960-1000	500	3

7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 23.2 °C Humidity: 45.6 % RH Atmospheric Pressure: 1020 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	04	TX mode (U-NII-1) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Pre-scan	05	TX mode (U-NII-2A) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Pre-scan	06	TX mode (U-NII-2C) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.

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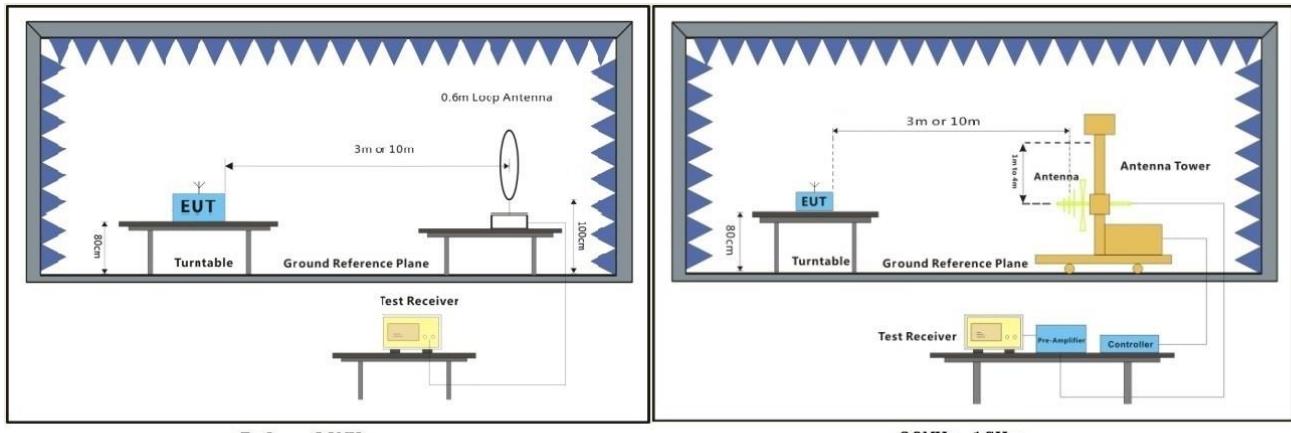
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Pre-scan	07	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
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7.3.3 Test Setup Diagram



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7.3.4 Measurement Procedure and Data

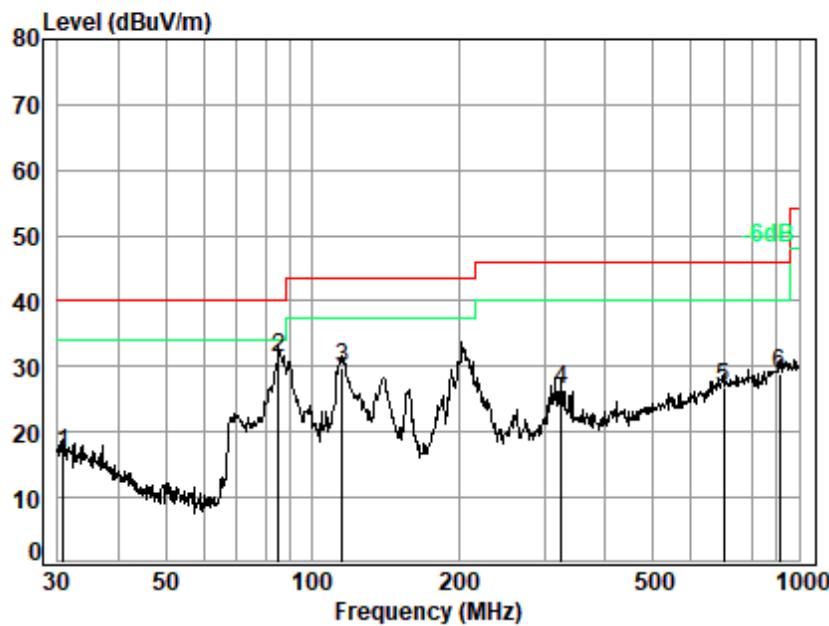
- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using quasi-peak method as specified and then reported in a data sheet.
- g. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- i. Repeat above procedures until all frequencies measured was complete.

Remark:

1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
2. For emission below 1GHz, through the pre-scan found the worst case is the lowest channel of 802.11a. Only the worst case is recorded in the report.
3. Scan from 9kHz to 30MHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
4. The disturbance below 1GHz was very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.



Test Mode: 04; Polarity: Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No. : 00164TL
Test Mode: 04

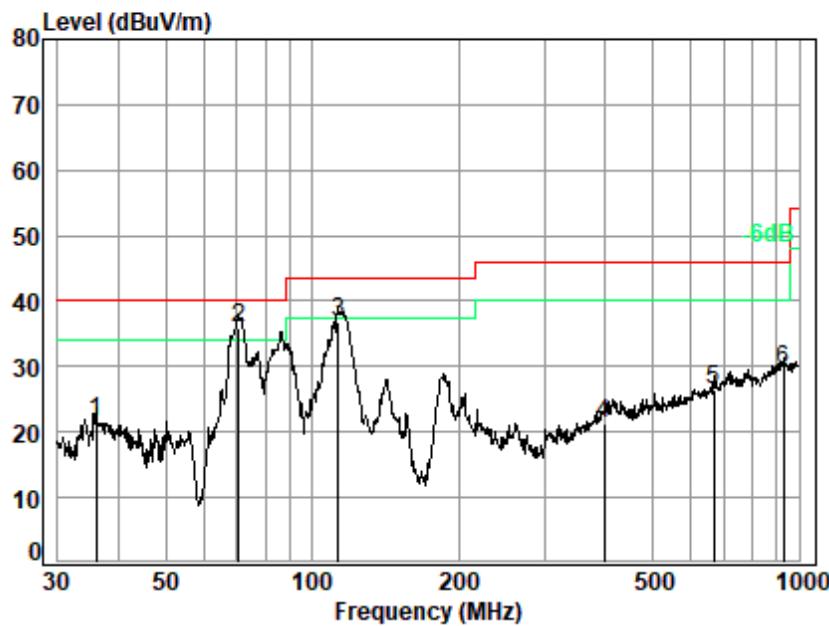
Freq	Ant Factor	Cable Loss	Preamp Factor	Read Level	Limit Level	Line Limit	Over Limit	Remark	
								MHz	dB/m
1	30.853	20.81	0.68	27.79	23.08	16.78	40.00	-23.22	QP
2 q	85.298	11.07	1.13	27.63	46.69	31.26	40.00	-8.74	QP
3	115.321	11.39	1.33	27.53	44.54	29.73	43.50	-13.77	QP
4	324.456	18.60	2.30	26.85	32.34	26.39	46.00	-19.61	QP
5	699.305	25.93	3.54	27.73	25.04	26.78	46.00	-19.22	QP
6	909.667	27.97	4.15	26.70	23.57	28.99	46.00	-17.01	QP

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Test Mode: 04; Polarity: Vertical



Site : chamber
 Condition: 3m VERTICAL
 Job No. : 00164TL
 Test Mode: 04

Freq	Ant Factor	Cable Loss	Preamp Factor	Read Level	Limit		Over Limit	Remark	
					MHz	dB/m	dB	dBuV	dBuV/m
1	36.001	18.31	0.74	27.77	30.32	21.60	40.00	-18.40	QP
2 q	70.584	10.58	1.02	27.67	52.01	35.94	40.00	-4.06	QP
3	112.920	11.61	1.31	27.54	51.45	36.83	43.50	-6.67	QP
4	397.633	20.65	2.57	27.15	25.27	21.34	46.00	-24.66	QP
5	668.142	25.49	3.45	27.80	25.44	26.58	46.00	-19.42	QP
6	929.008	28.16	4.20	26.56	23.59	29.39	46.00	-16.61	QP

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7.4 Radiated Emissions (Above 1GHz)

Test Requirement 47 CFR Part 15, Subpart C 15.209 & Subpart E 15.407(b)

Test Method: ANSI C63.10 (2013) Section 6.6

Measurement Distance: 3m

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

*(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band:

(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

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7.4.1 E.U.T. Operation

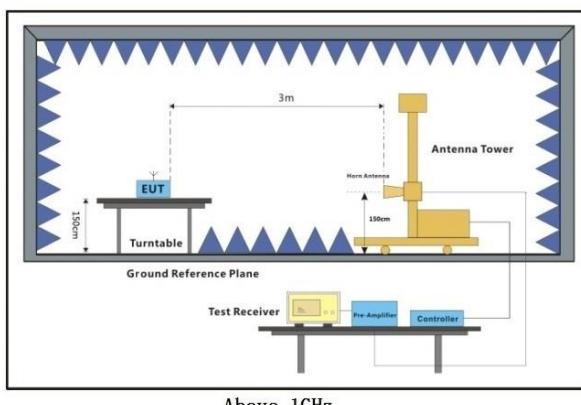
Operating Environment:

Temperature: 21.6 °C Humidity: 55.9 % RH Atmospheric Pressure: 1020 mbar

7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	04	TX mode (U-NII-1) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	05	TX mode (U-NII-2A) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	06	TX mode (U-NII-2C) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	07	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.

7.4.3 Test Setup Diagram



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7.4.4 Measurement Procedure and Data

- a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet.
- g. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- i. Repeat above procedures until all frequencies measured was complete.

Remark:

1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.
4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.
5. For devices with multiple operating modes, measurements on the middle channel is used to determine the worst-case mode(s). Only the worst case mode with the highest output power and the mode with the highest output power spectral density for each modulation family (e.g., OFDM and direct sequence spread spectrum) is recorded in the test report.
6. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for Peak detection (PK) and Average detection (AV) at frequency above 1GHz.
7. For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.

Remark: Only the data of the worst mode, 802.11a, is retained in the report.



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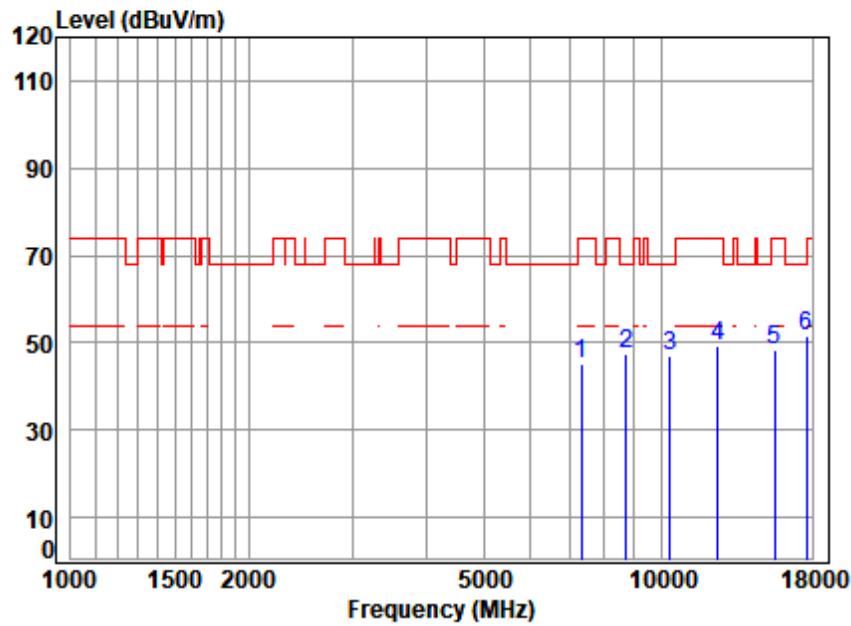
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Test Mode: 04; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Condition: 3m HORIZONTAL

Job No : 00164TL/00165TL

Mode : 5180 TX RSE

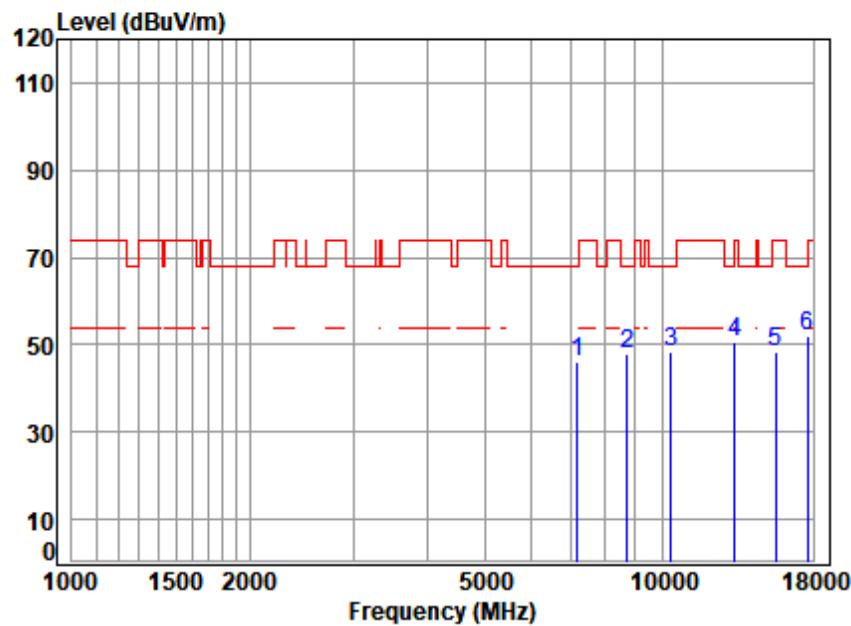
Freq	Cable	Ant	Preamp	Read	Limit		Over	Remark
	MHz	Loss	Factor	Factor	Level	Level	Line	
1	7322.668	11.51	36.75	56.44	53.19	45.01	74.00	-28.99 Peak
2	8733.685	12.14	38.53	55.24	52.06	47.49	68.20	-20.71 peak
3	10360.000	13.60	39.00	53.88	48.46	47.18	68.20	-21.02 peak
4	12461.800	15.42	39.90	54.12	48.07	49.27	74.00	-24.73 Peak
5	15540.000	17.00	38.56	54.14	46.93	48.35	74.00	-25.65 peak
6	pp17601.130	19.79	40.32	54.42	46.09	51.78	68.20	-16.42 Peak



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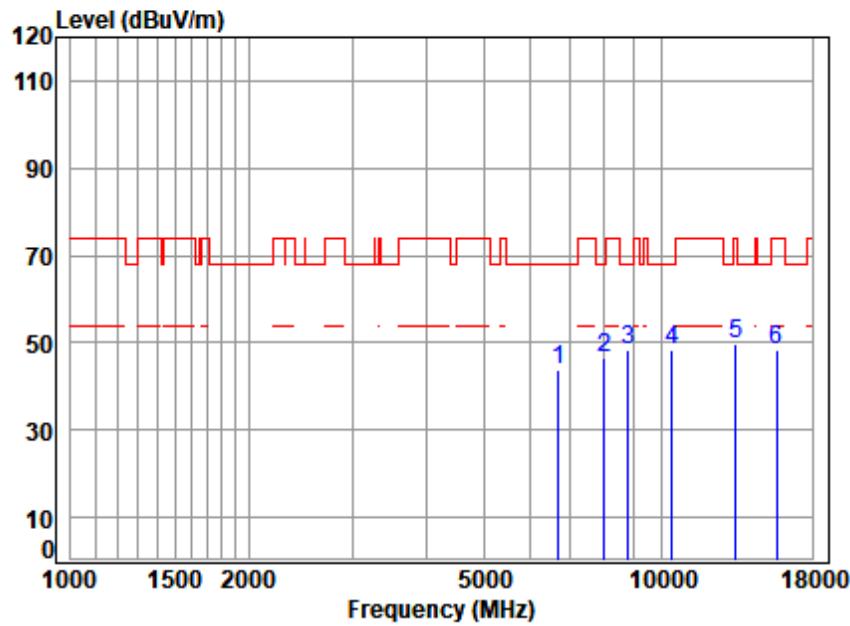
Test Mode: 04; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low

**Condition: 3m VERTICAL****Job No : 00164TL/00165TL****Mode : 5180 TX RSE****: 5G Wi-Fi 11a**

Freq	Cable	Ant	Preamp	Read	Limit		Over	Remark
	Loss	Factor	Factor	Level	Level	Line	Limit	
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	7189.636	11.57	36.58	56.55	54.27	45.87	68.20	-22.33 Peak
2	8715.911	12.12	38.57	55.26	52.36	47.79	68.20	-20.41 peak
3	10360.000	13.60	39.00	53.88	49.78	48.50	68.20	-19.70 peak
4	13274.160	16.32	40.27	54.47	48.67	50.79	74.00	-23.21 Peak
5	15540.000	17.00	38.56	54.14	46.81	48.23	74.00	-25.77 peak
6	pp17637.030	19.54	40.86	54.43	46.05	52.02	68.20	-16.18 Peak



Test Mode: 04; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:middle

**Condition:** 3m HORIZONTAL**Job No** : 00164TL/00165TL**Mode** : 5220 TX RSE

: 5G Wi-Fi 11a

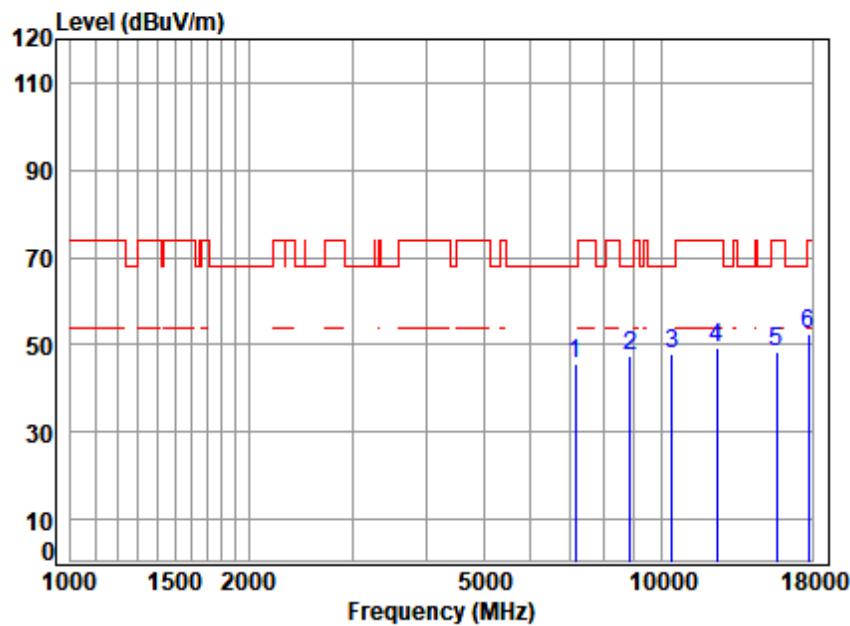
Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	6701.687	11.41	35.41	56.76	53.79	43.85	68.20 -24.35 Peak
2	7993.045	11.56	37.79	55.91	53.08	46.52	68.20 -21.68 Peak
3	8778.277	12.22	38.50	55.20	52.63	48.15	68.20 -20.05 peak
4	pp10440.000	13.63	39.04	53.84	49.63	48.46	68.20 -19.74 peak
5	13355.530	16.19	40.30	54.46	47.70	49.73	74.00 -24.27 Peak
6	15660.000	17.23	38.56	54.10	46.85	48.54	74.00 -25.46 peak

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Test Mode: 04; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:middle



Condition: 3m VERTICAL

Job No : 00164TL/00165TL

Mode : 5220 TX RSE

: 5G Wi-Fi 11a

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	7145.831	11.77	36.49	56.58	54.05	45.73	68.20 -22.47 Peak
2	8841.090	12.24	38.50	55.14	52.01	47.61	68.20 -20.59 peak
3	pp10440.000	13.63	39.04	53.84	48.87	47.70	68.20 -20.50 peak
4	12436.440	15.38	39.90	54.11	48.01	49.18	74.00 -24.82 Peak
5	15660.000	17.23	38.56	54.10	46.65	48.34	74.00 -25.66 peak
6	17763.230	18.76	42.24	54.45	45.86	52.41	74.00 -21.59 Peak

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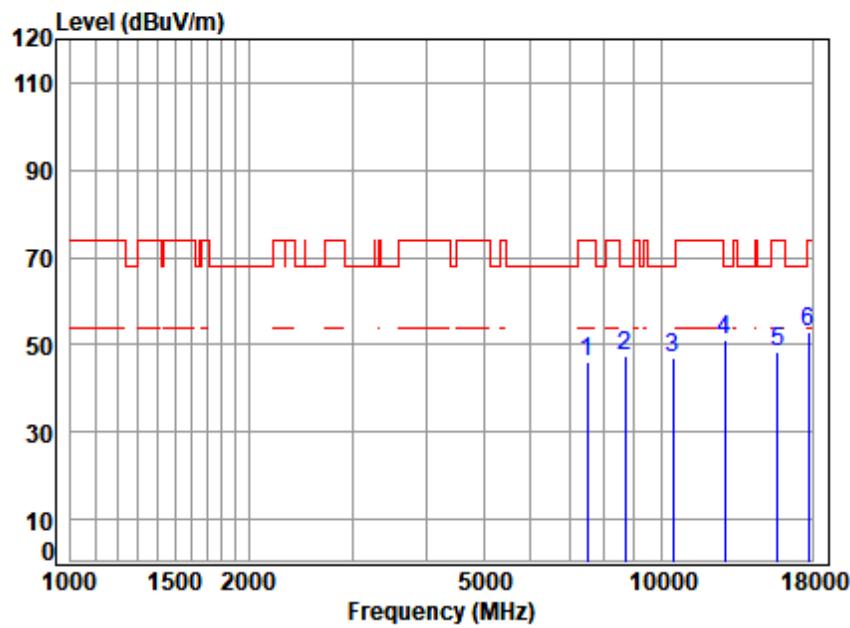
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Test Mode: 04; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High



Condition: 3m HORIZONTAL

Job No : 00164TL/00165TL

Mode : 5240 TX RSE

: 5G Wi-Fi 11a

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	7496.243	11.24	36.80	56.30	54.14	45.88	74.00 -28.12 Peak
2	8689.318	12.08	38.56	55.28	51.91	47.27	68.20 -20.93 peak
3	10480.000	13.64	39.08	53.81	48.07	46.98	68.20 -21.22 peak
4	pp12822.330	15.50	40.32	54.38	49.87	51.31	68.20 -16.89 Peak
5	15720.000	17.22	38.58	54.08	46.45	48.17	74.00 -25.83 peak
6	17763.230	18.76	42.24	54.45	46.36	52.91	74.00 -21.09 Peak

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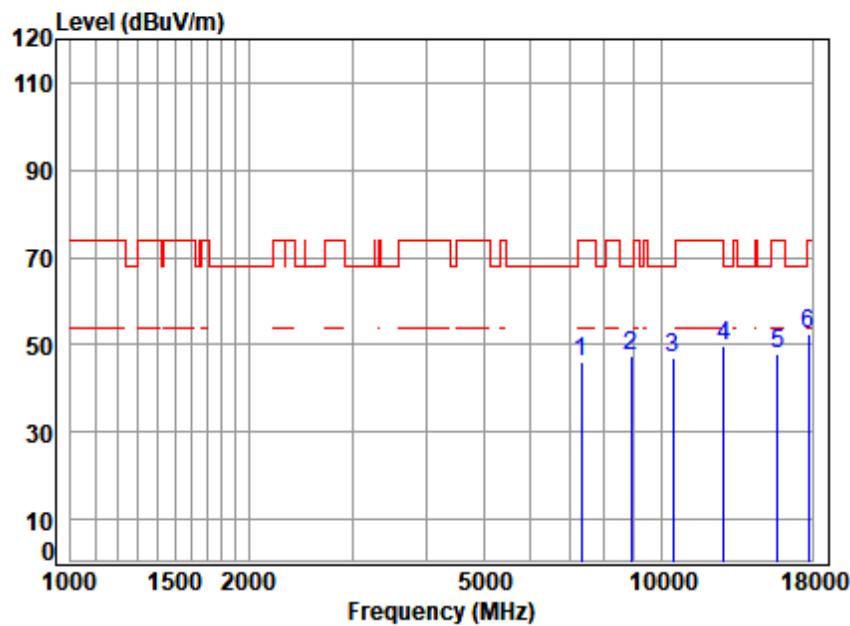
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Test Mode: 04; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High



Condition: 3m VERTICAL

Job No : 00164TL/00165TL

Mode : 5240 TX RSE

: 5G Wi-Fi 11a

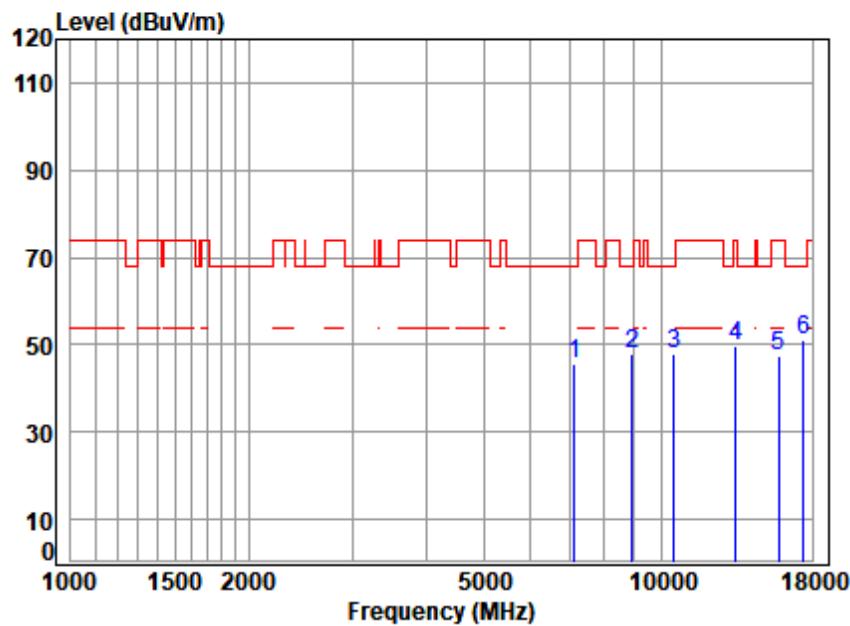
Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	7315.214	11.51	36.73	56.45	54.10	45.89	74.00 -28.11 Peak
2	8895.287	12.22	38.59	55.09	51.70	47.42	68.20 -20.78 peak
3	10480.000	13.64	39.08	53.81	48.21	47.12	68.20 -21.08 peak
4	pp12783.210	15.45	40.28	54.35	48.22	49.60	68.20 -18.60 Peak
5	15720.000	17.22	38.58	54.08	46.25	47.97	74.00 -26.03 peak
6	17781.330	18.67	42.37	54.46	45.73	52.31	74.00 -21.69 Peak

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Test Mode: 05; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Condition: 3m HORIZONTAL

Job No : 00164TL/00165TL

Mode : 5260 TX RSE

: 5G Wi-Fi 11a

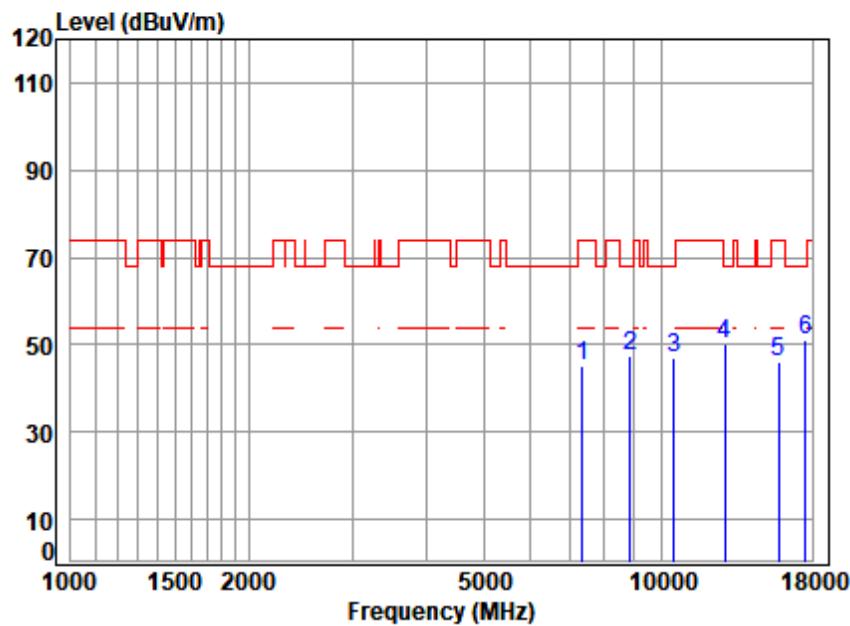
Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	7116.776	11.91	36.43	56.61	54.10	45.83	68.20 -22.37 Peak
2	8931.603	12.20	38.54	55.06	52.29	47.97	68.20 -20.23 peak
3	10520.000	13.63	39.14	53.79	48.99	47.97	68.20 -20.23 peak
4	13369.140	16.10	40.30	54.46	47.90	49.84	74.00 -24.16 Peak
5	15780.000	17.08	38.52	54.07	46.13	47.66	74.00 -26.34 peak
6	pp17387.310	18.10	40.37	54.38	46.94	51.03	68.20 -17.17 Peak



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Test Mode: 05; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low

**Condition: 3m VERTICAL****Job No : 00164TL/00165TL****Mode : 5260 TX RSE**

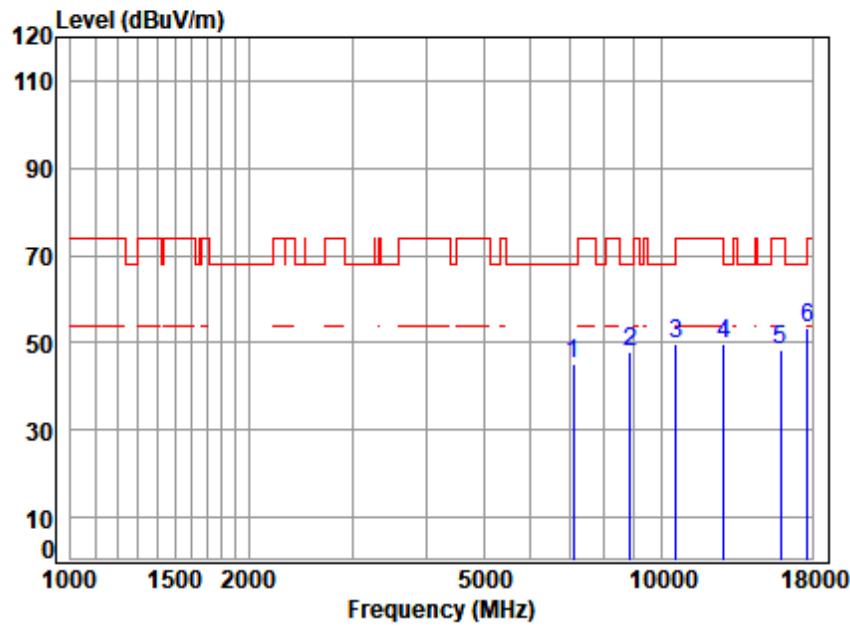
Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	7352.564	11.50	36.79	56.42	53.46	45.33	74.00 -28.67 Peak
2	8868.147	12.23	38.54	55.12	51.71	47.36	68.20 -20.84 peak
3	10520.000	13.63	39.14	53.79	48.15	47.13	68.20 -21.07 peak
4	12796.230	15.43	40.30	54.36	48.80	50.17	68.20 -18.03 Peak
5	15780.000	17.08	38.52	54.07	44.57	46.10	74.00 -27.90 peak
6	pp17529.570	18.83	40.72	54.41	45.74	50.88	68.20 -17.32 Peak



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Test Mode: 05; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:middle

**Condition:** 3m HORIZONTAL**Job No** : 00164TL/00165TL**Mode** : 5300 TX RSE

: 5G Wi-Fi 11a

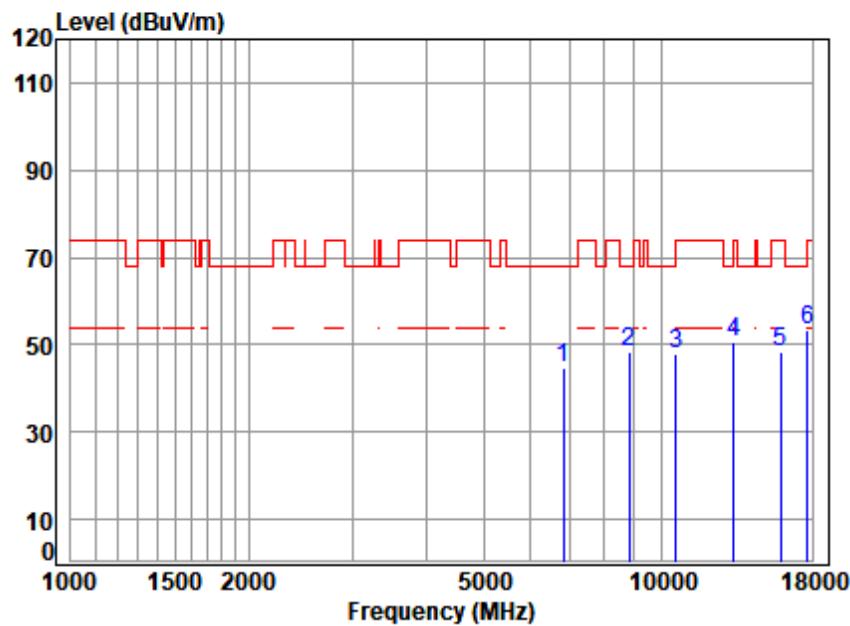
Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	7095.063	11.96	36.39	56.62	53.50	45.23	68.20 -22.97 Peak
2	8841.090	12.24	38.50	55.14	52.30	47.90	68.20 -20.30 peak
3	10600.000	13.59	39.30	53.74	50.37	49.52	68.20 -18.68 peak
4	12783.210	15.45	40.28	54.35	48.34	49.72	68.20 -18.48 Peak
5	15900.000	17.28	38.70	54.03	46.29	48.24	74.00 -25.76 peak
6	pp17691.000	19.15	41.67	54.44	46.95	53.33	68.20 -14.87 Peak

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Test Mode: 05; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:middle



Condition: 3m VERTICAL

Job No : 00164TL/00165TL

Mode : 5300 TX RSE

: 5G Wi-Fi 11a

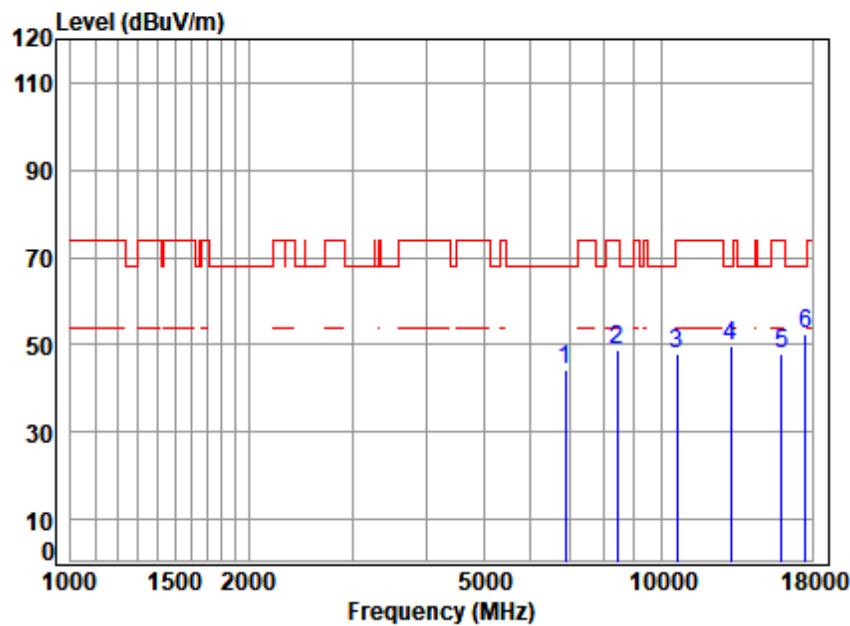
Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	6832.646	11.37	35.97	56.73	53.97	44.58	68.20 -23.62 Peak
2	8832.090	12.24	38.50	55.15	52.82	48.41	68.20 -19.79 peak
3	10600.000	13.59	39.30	53.74	48.58	47.73	68.20 -20.47 peak
4	13274.160	16.32	40.27	54.47	48.37	50.49	74.00 -23.51 Peak
5	15900.000	17.28	38.70	54.03	46.47	48.42	74.00 -25.58 peak
6	pp17691.000	19.15	41.67	54.44	46.90	53.28	68.20 -14.92 Peak



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Test Mode: 05; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High

**Condition: 3m HORIZONTAL****Job No : 00164TL/00165TL****Mode : 5320 TX RSE****: 5G Wi-Fi 11a**

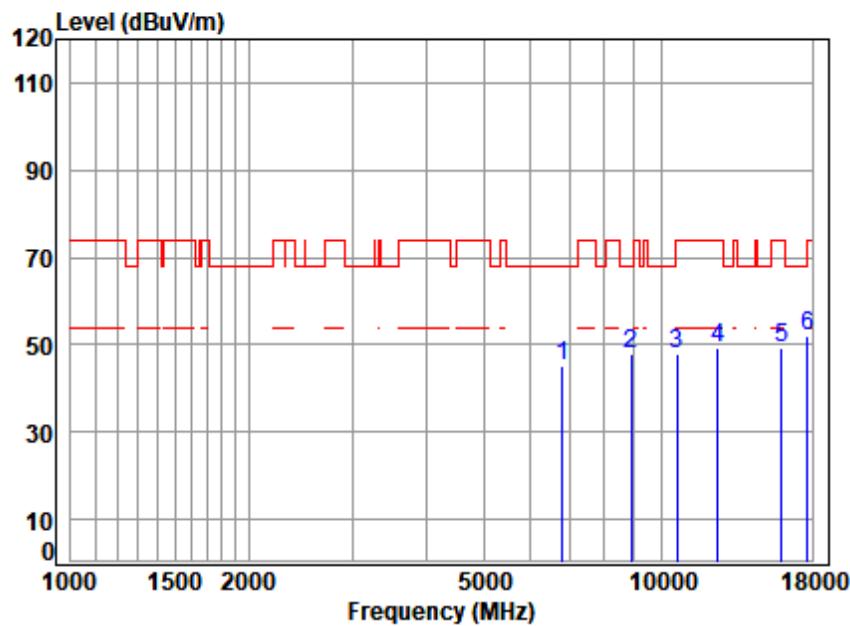
Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	6874.532	11.37	36.10	56.73	53.61	44.35	68.20 -23.85 Peak
2	8436.402	11.88	38.45	55.51	54.00	48.82	74.00 -25.18 peak
3	10640.000	13.77	39.34	53.72	48.54	47.93	74.00 -26.07 peak
4	13086.220	15.61	40.30	54.49	48.40	49.82	68.20 -18.38 Peak
5	15960.000	17.20	38.64	54.01	45.97	47.80	74.00 -26.20 peak
6	pp17511.720	18.58	40.83	54.40	47.37	52.38	68.20 -15.82 Peak

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Test Mode: 05; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High

**Condition: 3m VERTICAL****Job No : 00164TL/00165TL****Mode : 5320 TX RSE****: 5G Wi-Fi 11a**

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	6791.017	11.37	35.86	56.74	54.85	45.34	68.20 -22.86 Peak
2	8886.231	12.22	38.57	55.10	52.22	47.91	68.20 -20.29 peak
3	10640.000	13.77	39.34	53.72	48.61	48.00	74.00 -26.00 peak
4	12474.500	15.44	39.90	54.13	48.27	49.48	74.00 -24.52 Peak
5	15960.000	17.20	38.64	54.01	47.42	49.25	74.00 -24.75 peak
6	pp17691.000	19.15	41.67	54.44	45.82	52.20	68.20 -16.00 Peak

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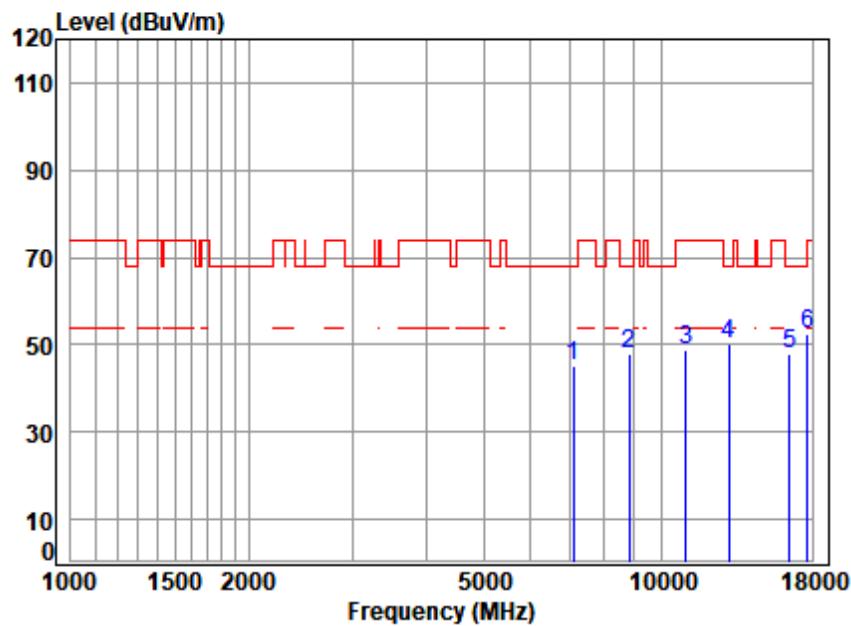
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Test Mode: 06; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low

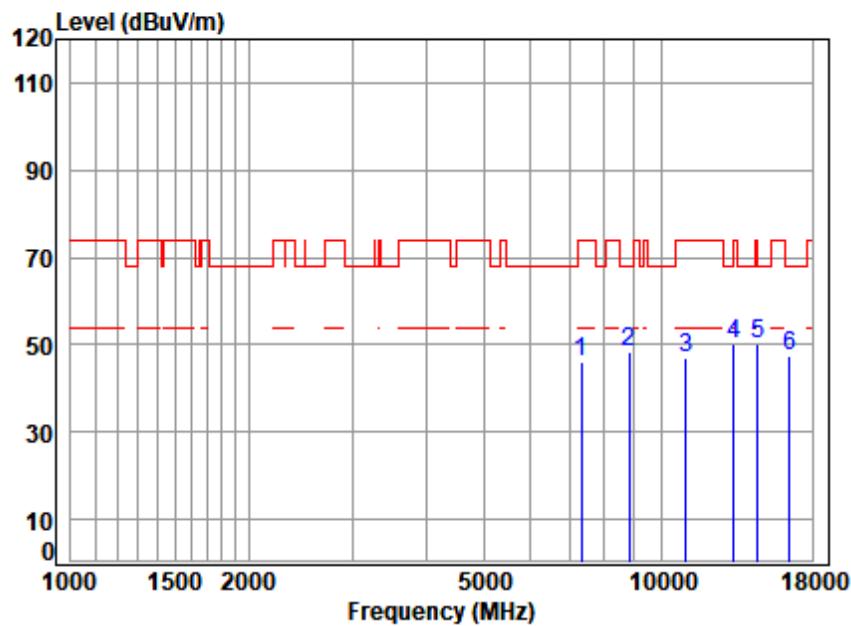


Condition: 3m HORIZONTAL
Job No : 00164TL/00165TL
Mode : 5500 TX RSE
: 5G Wi-Fi 11a

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	7087.840	11.91	36.38	56.63	53.50	45.16	68.20 -23.04 Peak
2	8814.115	12.25	38.50	55.17	52.33	47.91	68.20 -20.29 peak
3	11000.000	14.17	39.40	53.50	48.61	48.68	74.00 -25.32 peak
4	13006.480	15.87	40.30	54.50	48.58	50.25	68.20 -17.95 Peak
5	16500.000	17.74	38.90	54.15	45.35	47.84	68.20 -20.36 peak
6	pp17672.990	19.28	41.39	54.43	46.42	52.66	68.20 -15.54 Peak



Test Mode: 06; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Condition: 3m VERTICAL

Job No : 00164TL/00165TL

Mode : 5500 TX RSE

: 5G Wi-Fi 11a

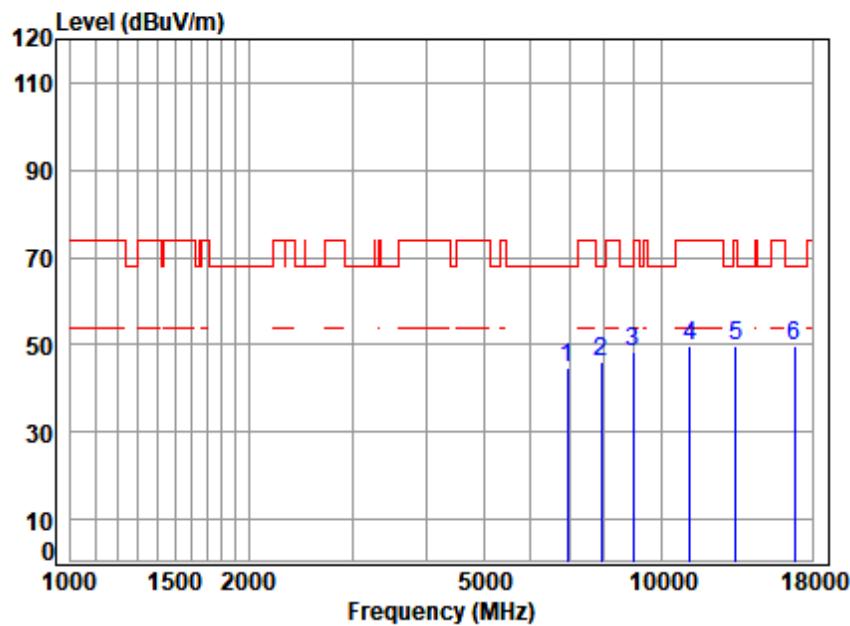
Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	7307.767	11.51	36.72	56.45	54.28	46.06	74.00 -27.94 Peak
2	8805.143	12.25	38.50	55.18	52.78	48.35	68.20 -19.85 peak
3	11000.000	14.17	39.40	53.50	47.14	47.21	74.00 -26.79 peak
4	13274.160	16.32	40.27	54.47	48.11	50.23	74.00 -23.77 Peak
5	pp14548.540	16.66	39.40	54.35	48.35	50.06	68.20 -18.14 Peak
6	16500.000	17.74	38.90	54.15	45.15	47.64	68.20 -20.56 peak



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Test Mode: 06; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:middle



Condition: 3m HORIZONTAL

Job No : 00164TL/00165TL

Mode : 5600 TX RSE

: 5G Wi-Fi 11a

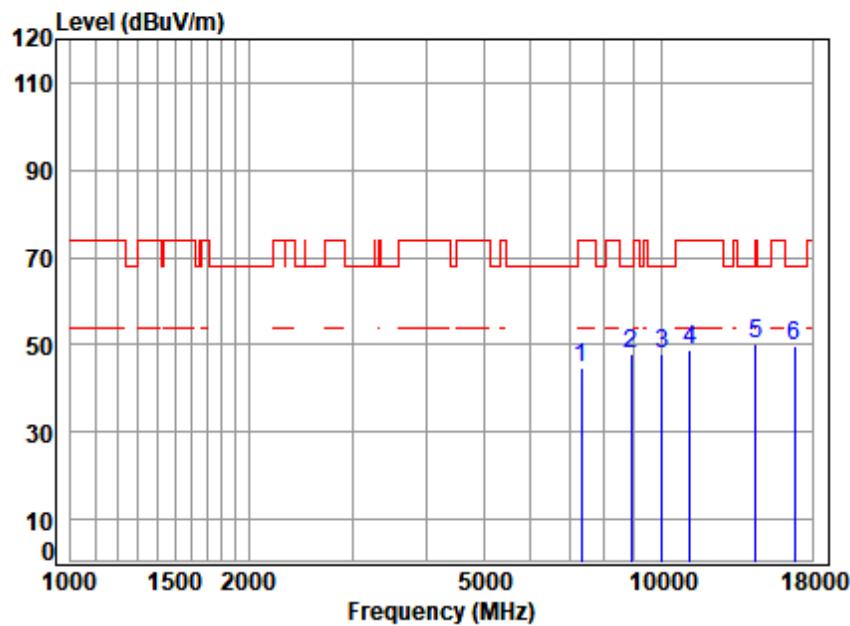
Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	6944.911	11.37	36.11	56.71	54.10	44.87	68.20 -23.33 Peak
2	7912.043	11.54	37.62	55.97	53.11	46.30	68.20 -21.90 Peak
3	8958.938	12.18	38.52	55.04	52.75	48.41	68.20 -19.79 peak
4	11200.000	14.76	39.60	53.56	48.83	49.63	74.00 -24.37 peak
5	13382.770	16.02	40.30	54.46	47.83	49.69	74.00 -24.31 Peak
6	pp16800.000	17.46	39.60	54.24	46.91	49.73	68.20 -18.47 peak



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Test Mode: 06; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:middle

**Condition: 3m VERTICAL****Job No : 00164TL/00165TL****Mode : 5600 TX RSE****: 5G Wi-Fi 11a**

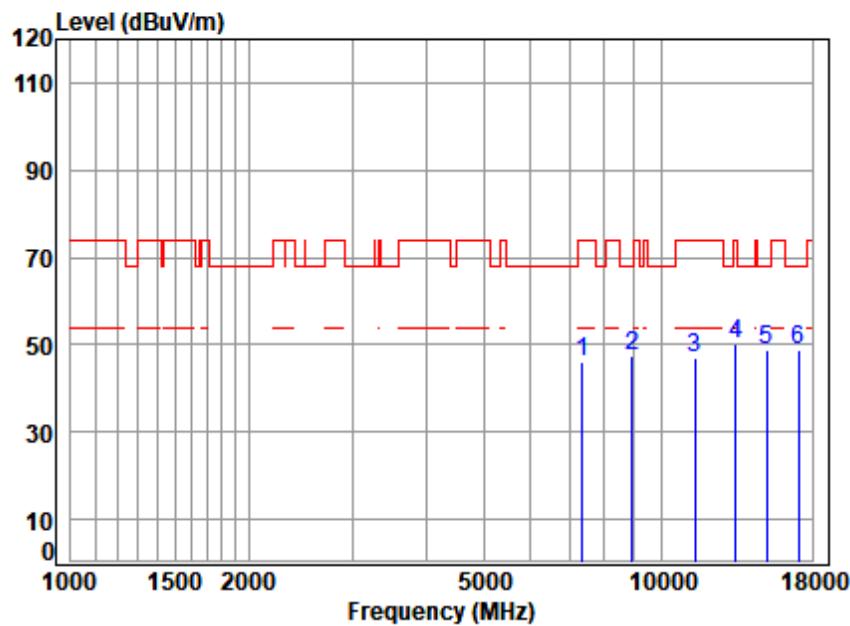
Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	7330.131	11.51	36.76	56.44	52.96	44.79	74.00 -29.21 Peak
2	8904.353	12.22	38.59	55.09	52.14	47.86	68.20 -20.34 peak
3	10021.110	13.06	38.94	54.09	50.06	47.97	68.20 -20.23 Peak
4	11200.000	14.76	39.60	53.56	47.88	48.68	74.00 -25.32 peak
5	14474.640	17.03	39.53	54.35	47.80	50.01	74.00 -23.99 Peak
6	pp16800.000	17.46	39.60	54.24	46.92	49.74	68.20 -18.46 peak



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Test Mode: 06; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High



Condition: 3m HORIZONTAL
Job No : 00164TL/00165TL
Mode : 5700 TX RSE
: 5G Wi-Fi 11a

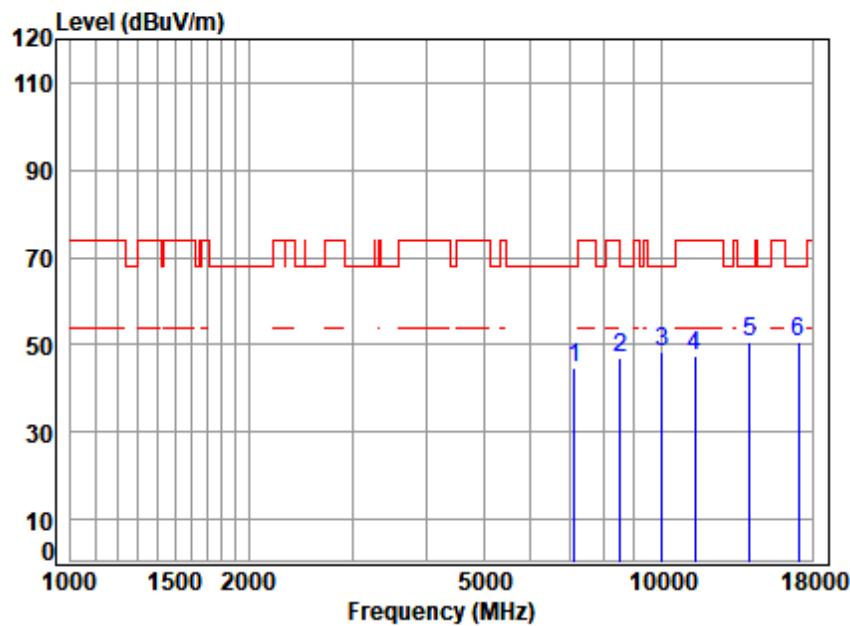
Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	7360.057	11.50	36.78	56.41	54.40	46.27	74.00 -27.73 Peak
2	8913.427	12.21	38.57	55.08	51.79	47.49	68.20 -20.71 peak
3	11400.000	14.21	39.70	53.62	46.90	47.19	74.00 -26.81 peak
4	13382.770	16.02	40.30	54.46	48.52	50.38	74.00 -23.62 Peak
5	pp15091.920	16.70	38.71	54.27	47.87	49.01	68.20 -19.19 Peak
6	17100.000	18.47	39.80	54.32	44.92	48.87	68.20 -19.33 peak

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Test Mode: 06; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High

**Condition: 3m VERTICAL****Job No : 00164TL/00165TL****Mode : 5700 TX RSE**

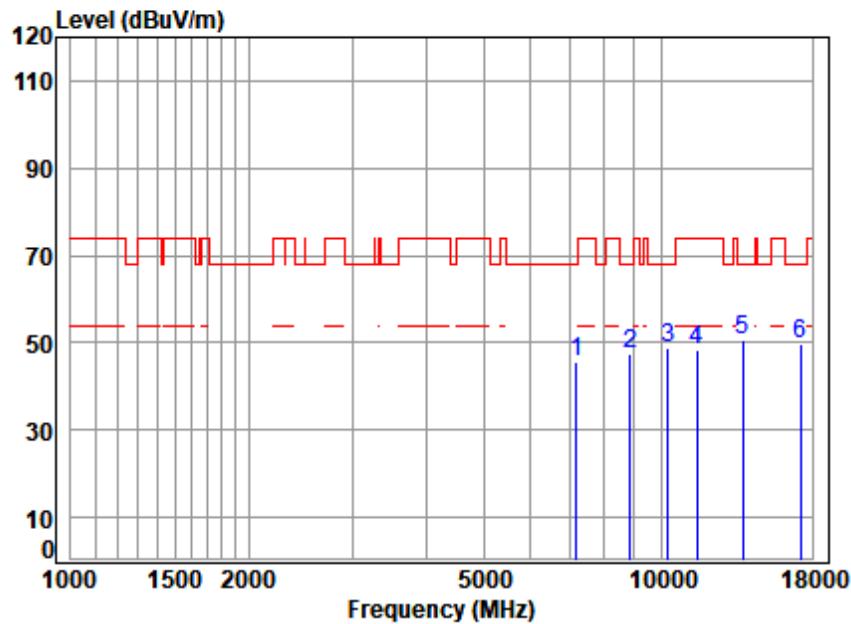
Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	7131.289	11.84	36.46	56.59	53.10	44.81	68.20 -23.39 Peak
2	8505.428	12.29	38.30	55.45	51.81	46.95	68.20 -21.25 peak
3	10031.330	13.09	38.96	54.08	50.50	48.47	68.20 -19.73 Peak
4	11400.000	14.21	39.70	53.62	47.26	47.55	74.00 -26.45 peak
5	pp14096.340	16.58	39.90	54.39	48.77	50.86	68.20 -17.34 Peak
6	17100.000	18.47	39.80	54.32	46.66	50.61	68.20 -17.59 peak

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Test Mode: 07; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Condition: 3m HORIZONTAL

Job No : 00164TL/00165TL

Mode : 5745 TX RSE

: 5.8G Wi-Fi 11a

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	7189.636	11.57	36.58	56.55	53.81	45.41	68.20 -22.79 Peak
2	8850.100	12.23	38.50	55.13	51.96	47.56	68.20 -20.64 peak
3	10279.570	13.48	39.02	53.93	50.05	48.62	68.20 -19.58 Peak
4	11490.000	14.97	39.61	53.65	47.53	48.46	74.00 -25.54 peak
5	pp13741.920	16.22	39.96	54.43	48.76	50.51	68.20 -17.69 Peak
6	17235.000	17.83	40.01	54.35	46.17	49.66	68.20 -18.54 peak

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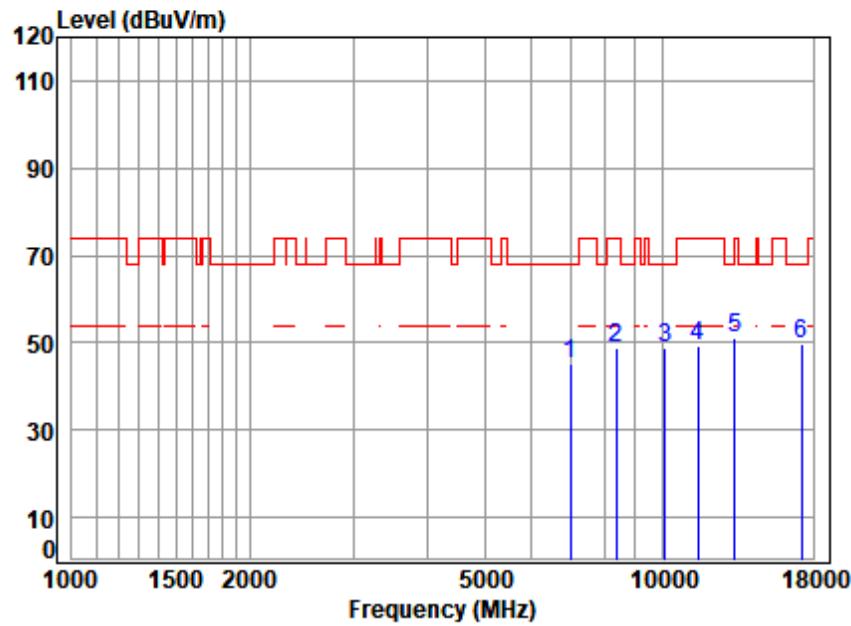
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Test Mode: 07; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Condition: 3m VERTICAL

Job No : 00164TL/00165TL

Mode : 5745 TX RSE

: 5.8G Wi-Fi 11a

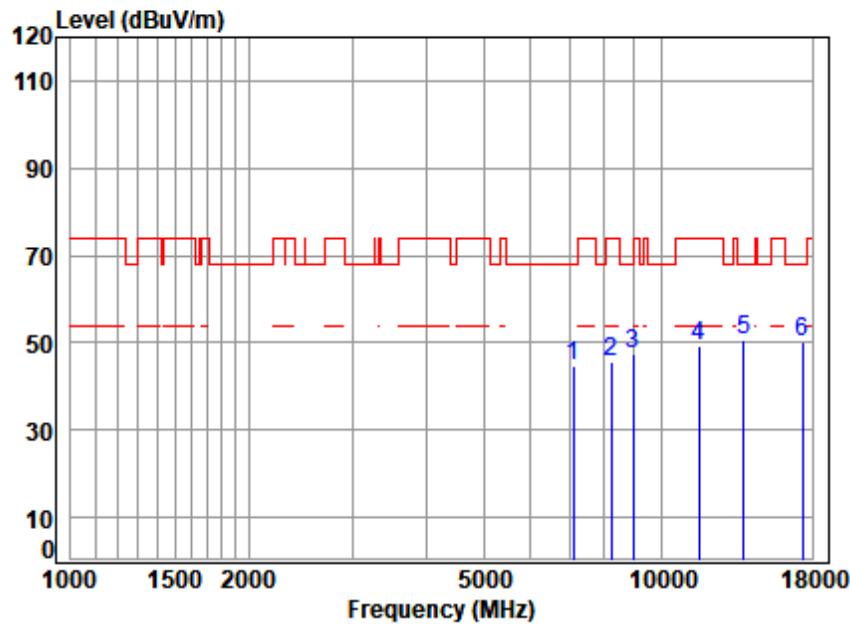
Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	7001.733	11.38	36.20	56.70	54.13	45.01	68.20 -23.19 Peak
2	8359.419	11.68	38.68	55.58	54.13	48.91	74.00 -25.09 peak
3	10113.400	13.25	39.10	54.03	50.32	48.64	68.20 -19.56 Peak
4	11490.000	14.97	39.61	53.65	48.24	49.17	74.00 -24.83 peak
5	13260.650	16.20	40.26	54.47	48.92	50.91	74.00 -23.09 Peak
6	pp17235.000	17.83	40.01	54.35	46.05	49.54	68.20 -18.66 peak



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Test Mode: 07; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:middle

**Condition:** 3m HORIZONTAL**Job No** : 00164TL/00165TL**Mode** : 5785 TX RSE

: 5.8G Wi-Fi 11a

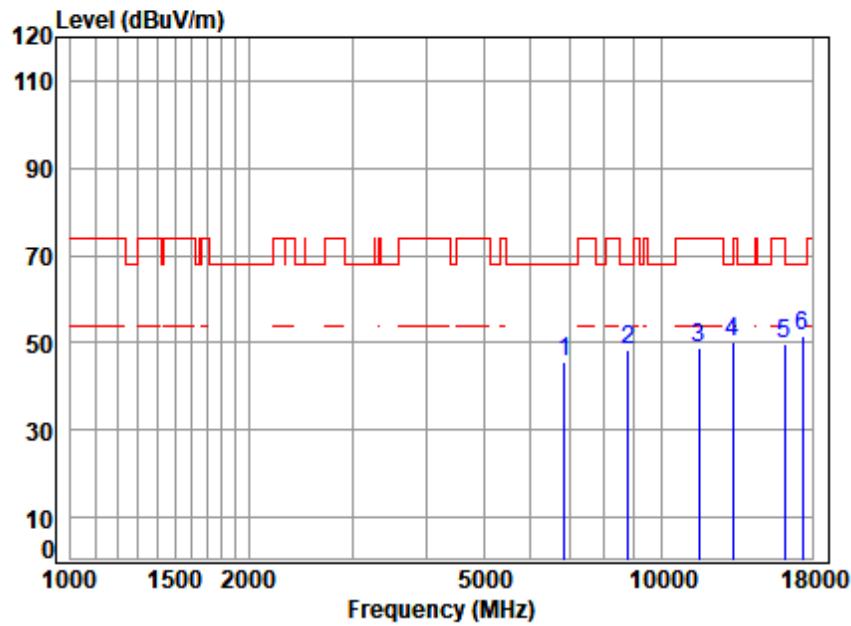
Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	7095.063	11.96	36.39	56.62	53.07	44.80	68.20 -23.40 Peak
2	8215.915	11.60	37.94	55.71	51.82	45.65	74.00 -28.35 Peak
3	8968.067	12.17	38.54	55.03	51.97	47.65	68.20 -20.55 peak
4	11570.000	14.78	39.60	53.67	48.61	49.32	74.00 -24.68 peak
5	13769.940	16.10	39.93	54.42	48.84	50.45	68.20 -17.75 Peak
6	17355.000	18.00	40.31	54.37	46.06	50.00	68.20 -18.20 peak

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Test Mode: 07; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:middle



Condition: 3m VERTICAL

Job No : 00164TL/00165TL

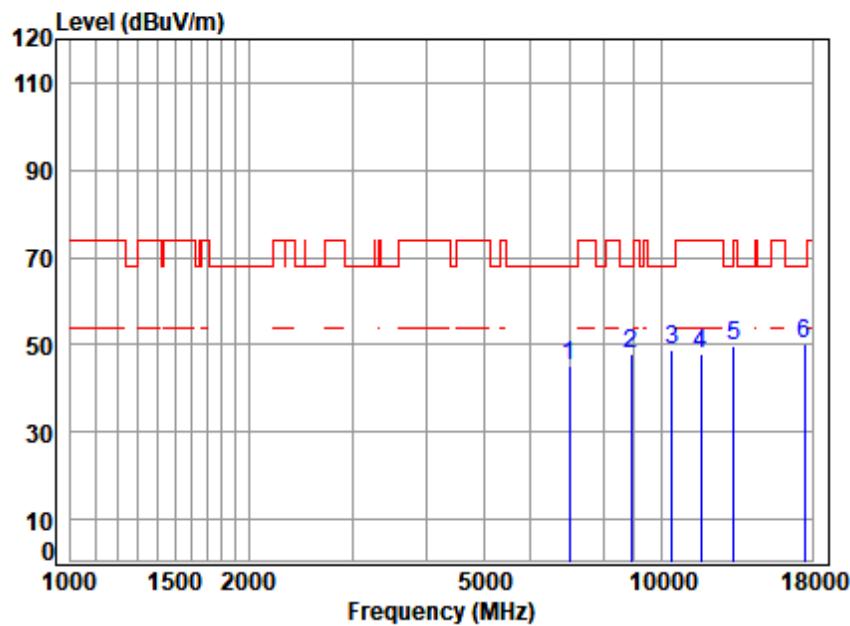
Mode : 5785 TX RSE

: 5.8G Wi-Fi 11a

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	6853.557	11.37	36.01	56.73	54.76	45.41	68.20 -22.79 Peak
2	8778.277	12.22	38.50	55.20	52.89	48.41	68.20 -19.79 peak
3	11570.000	14.78	39.60	53.67	48.21	48.92	74.00 -25.08 peak
4	13233.660	15.96	40.23	54.48	48.55	50.26	68.20 -17.94 Peak
5	16141.360	17.12	38.50	54.04	48.11	49.69	74.00 -24.31 Peak
6	pp17355.000	18.00	40.31	54.37	47.61	51.55	68.20 -16.65 peak



Test Mode: 07; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High



Condition: 3m HORIZONTAL

Job No : 00164TL/00165TL

Mode : 5825 TX RSE

: 5.8G Wi-Fi 11a

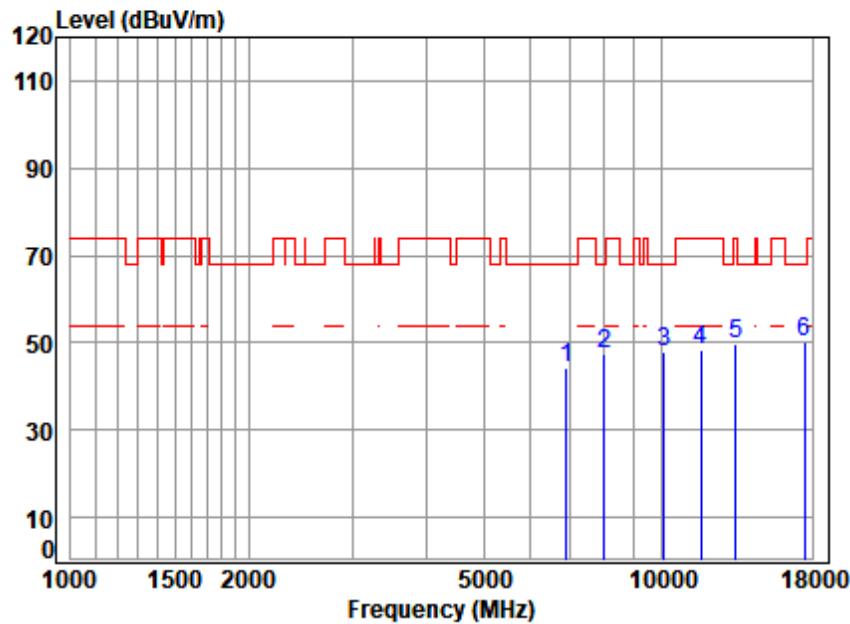
Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark	
	Loss	Factor	Factor	Level				
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	7001.733	11.38	36.20	56.70	54.39	45.27	68.20	-22.93 Peak
2	8877.185	12.23	38.55	55.11	52.23	47.90	68.20	-20.30 peak
3	10427.210	13.63	39.03	53.84	50.10	48.92	68.20	-19.28 Peak
4	11650.000	14.69	39.55	53.69	47.24	47.79	74.00	-26.21 peak
5	13260.650	16.20	40.26	54.47	47.88	49.87	74.00	-24.13 Peak
6	pp17475.000	18.35	40.78	54.40	45.66	50.39	68.20	-17.81 peak

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Test Mode: 07; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High

**Condition: 3m VERTICAL****Job No : 00164TL/00165TL****Mode : 5825 TX RSE****: 5.8G Wi-Fi 11a**

Freq	Cable	Ant	Preamp	Read	Limit		Over	Remark
	Loss	Factor	Factor	Level	Level	Line	Limit	
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	6909.632	11.37	36.18	56.72	53.61	44.44	68.20	-23.76 Peak
2	7993.045	11.56	37.79	55.91	54.15	47.59	68.20	-20.61 peak
3	10123.710	13.23	39.10	54.03	49.55	47.85	68.20	-20.35 Peak
4	11650.000	14.69	39.55	53.69	47.72	48.27	74.00	-25.73 peak
5	13341.940	16.28	40.30	54.47	47.55	49.66	74.00	-24.34 Peak
6	pp17475.000	18.35	40.78	54.40	45.61	50.34	68.20	-17.86 peak

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7.5 Radiated Emissions which fall in the restricted bands

Test Requirement 47 CFR Part 15, Subpart C 15.209 & Subpart E 15.407(b)

Test Method: ANSI C63.10 (2013) Section 6.10.5

Measurement Distance: 3m

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

*(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band:

(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

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7.5.1 E.U.T. Operation

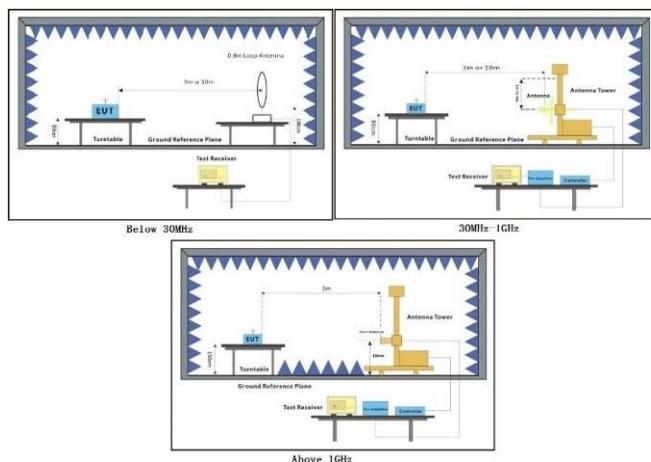
Operating Environment:

Temperature: 21.5 °C Humidity: 59.3 % RH Atmospheric Pressure: 1020 mbar

7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	04	TX mode (U-NII-1) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	05	TX mode (U-NII-2A) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	06	TX mode (U-NII-2C) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	07	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.

7.5.3 Test Setup Diagram



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7.5.4 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- h. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- j. Repeat above procedures until all frequencies measured was complete.

Remark 1: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

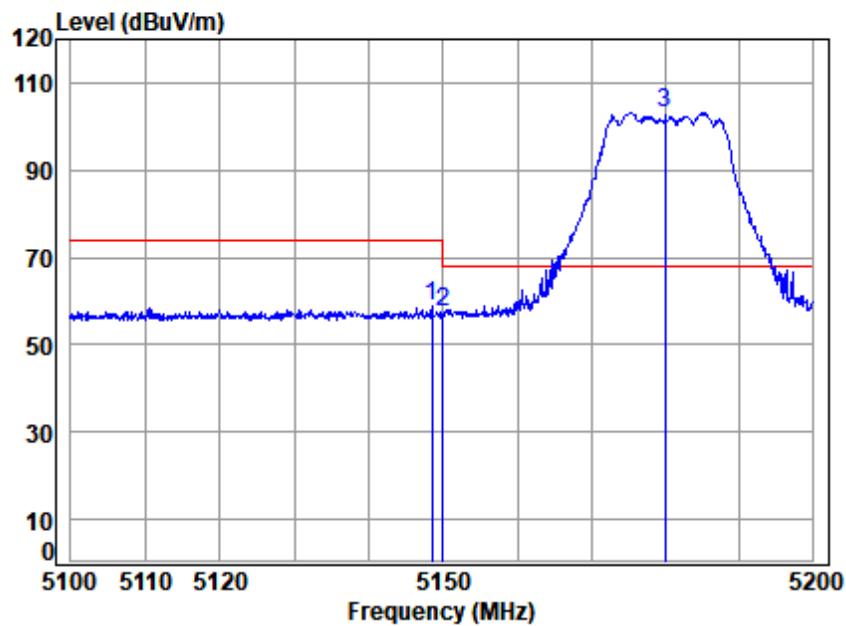
Remark 2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for Peak detection (PK) and Average detection (AV) at frequency above 1GHz.

Remark 3. For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.

Remark: Only the data of the 802.11a and 802.11n modes with a 20MHz bandwidth, the 802.11n mode with a 40MHz bandwidth, and the 802.11ac mode with an 80MHz bandwidth are retained in the report.



Test Mode: 04; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low

**Condition:** 3m HORIZONTAL**Job No :** 00164TL/00165TL**Mode :** 5180 Band edge
: 5G Wi-Fi 11a

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark	
	Loss	Factor	Factor	Level				
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5148.458	10.13	32.40	30.84	47.07	58.76	74.00	-15.24 peak
2	5149.980	10.14	32.40	30.84	45.63	57.33	74.00	-16.67 peak
3 pp	5180.000	10.25	32.46	30.83	91.28	103.16	68.20	34.96 peak

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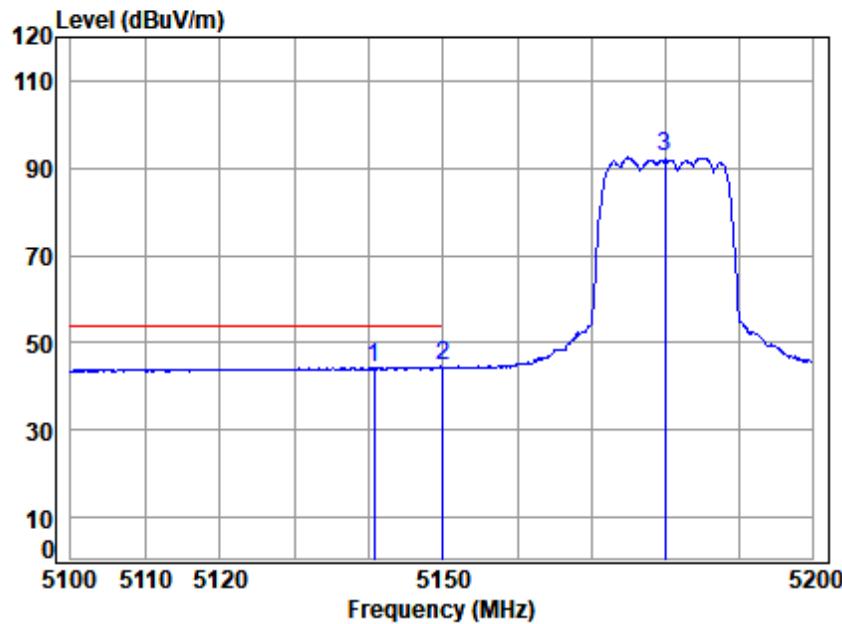
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Test Mode: 04; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Condition: 3m HORIZONTAL

Job No : 00164TL/00165TL

Mode : 5180 Band edge

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level		Limit Line	Over Limit	Remark
				Level	dBuV			
1	5140.666	10.10	32.38	30.84	32.75	44.39	54.00	-9.61 Average
2 pp	5149.980	10.14	32.40	30.84	32.87	44.57	54.00	-9.43 Average
3	5180.000	10.25	32.46	30.83	80.54	92.42	-----	----- Average

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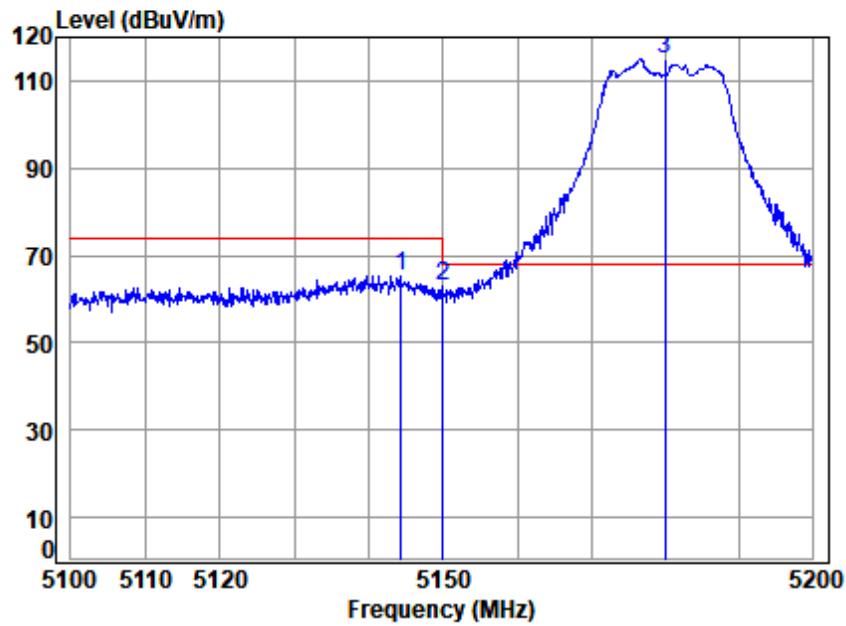
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Test Mode: 04; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Condition: 3m VERTICAL

Job No : 00164TL/00165TL

Mode : 5180 Band edge
: 5G Wi-Fi 11a

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	5144.260	10.12	32.39	30.84	53.66	65.33	74.00 -8.67 Peak
2	5149.980	10.14	32.40	30.84	51.34	63.04	74.00 -10.96 Peak
3 pp	5180.000	10.25	32.46	30.83	103.05	114.93	68.20 46.73 Peak

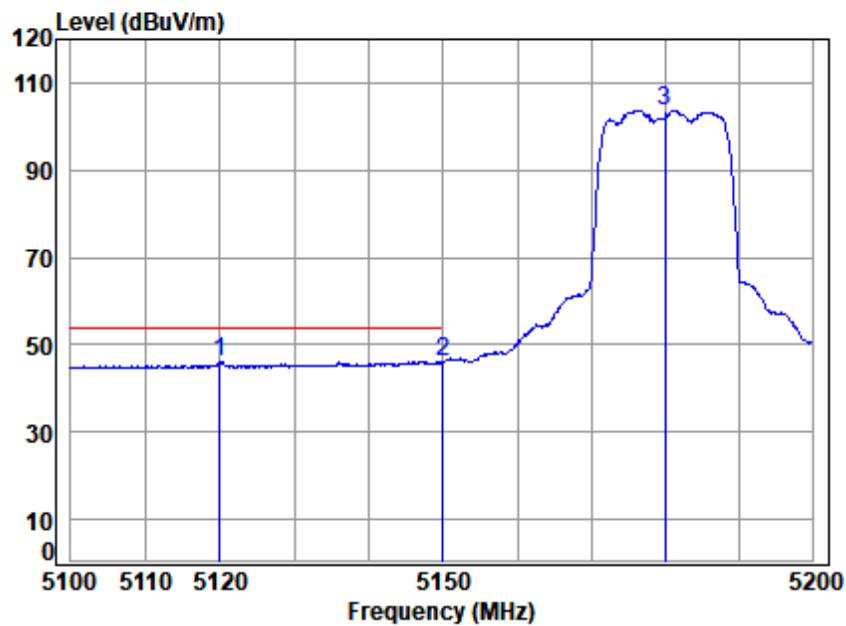
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Test Mode: 04; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low

**Condition: 3m VERTICAL****Job No : 00164TL/00165TL****Mode : 5180 Band edge
: 5G Wi-Fi 11a**

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	5119.944	10.03	32.34	30.85	34.57	46.09	54.00 -7.91 Average
2 pp	5149.980	10.14	32.40	30.84	34.45	46.15	54.00 -7.85 Average
3	5180.000	10.25	32.46	30.83	91.82	103.70	----- ----- Average

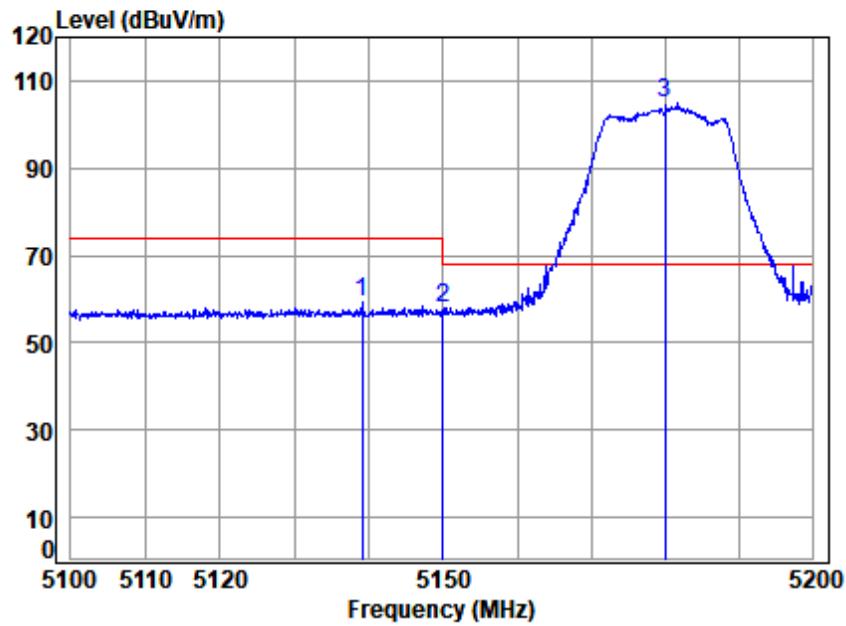
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Test Mode: 04; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Condition: 3m HORIZONTAL

Job No : 00164TL/00165TL

Mode : 5180 Band edge

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark	
	Loss	Factor	Factor	Level	Level	Line		
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5139.068	10.10	32.38	30.84	47.46	59.10	74.00	-14.90 peak
2	5149.980	10.14	32.40	30.84	46.33	58.03	74.00	-15.97 peak
3 pp	5180.000	10.25	32.46	30.83	92.92	104.80	68.20	36.60 peak

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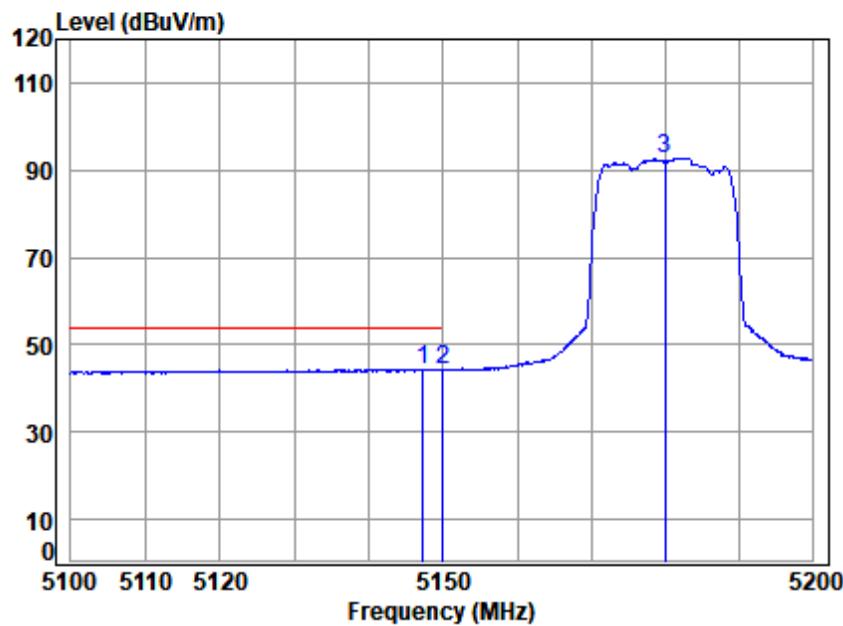
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Test Mode: 04; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Condition: 3m HORIZONTAL

Job No : 00164TL/00165TL

Mode : 5180 Band edge

: 5G Wi-Fi 11n20

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark	
	Loss	Factor	Factor	Level	Level	Line		
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 pp	5147.258	10.13	32.39	30.84	32.79	44.47	54.00	-9.53 Average
2	5149.980	10.14	32.40	30.84	32.58	44.28	54.00	-9.72 Average
3	5180.000	10.25	32.46	30.83	80.88	92.76	-----	----- Average

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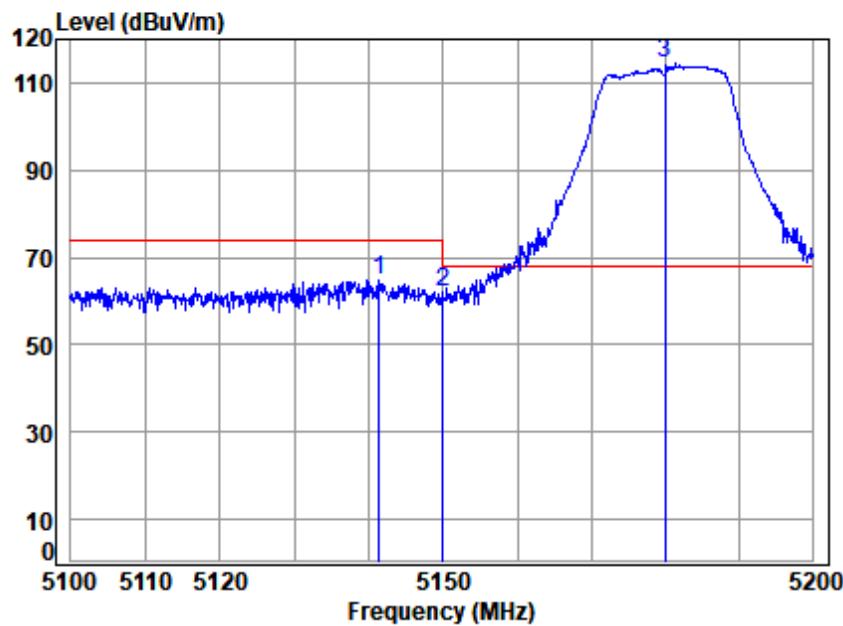
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Test Mode: 04; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Condition: 3m VERTICAL

Job No : 00164TL/00165TL

Mode : 5180 Band edge
: 5G Wi-Fi 11n20

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	5141.364	10.11	32.38	30.84	53.07	64.72	74.00 -9.28 Peak
2	5149.980	10.14	32.40	30.84	50.13	61.83	74.00 -12.17 Peak
3 pp	5180.000	10.25	32.46	30.83	102.86	114.74	68.20 46.54 Peak

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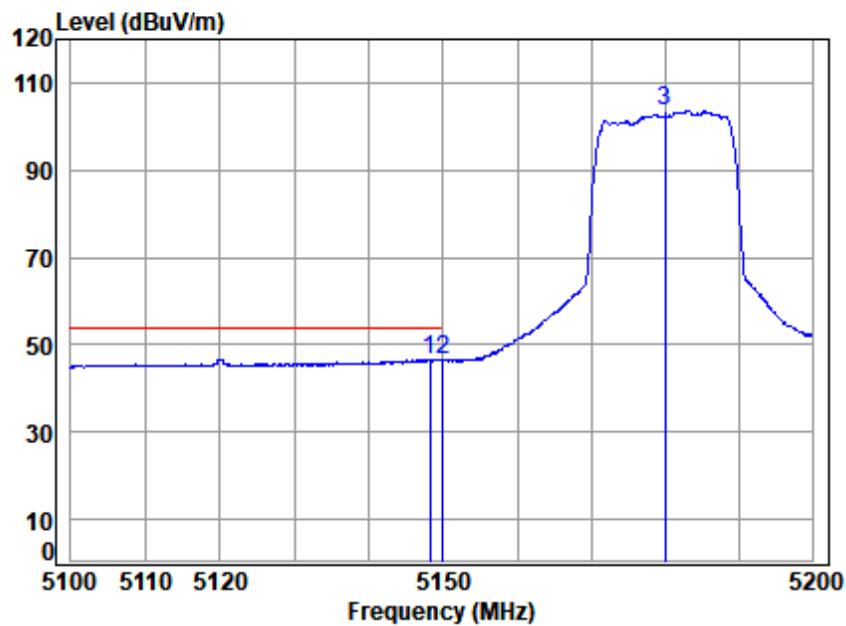
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Test Mode: 04; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low

**Condition: 3m VERTICAL****Job No : 00164TL/00165TL**
Mode : 5180 Band edge
: 5G Wi-Fi 11n20

Freq	Cable	Ant	Preamp	Read	Limit		Over	Remark
	Loss	Factor	Factor	Level	Level	Line	Limit	
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 pp	5148.257	10.13	32.40	30.84	34.95	46.64	54.00	-7.36 Average
2	5149.980	10.14	32.40	30.84	34.89	46.59	54.00	-7.41 Average
3	5180.000	10.25	32.46	30.83	91.70	103.58	-----	----- Average

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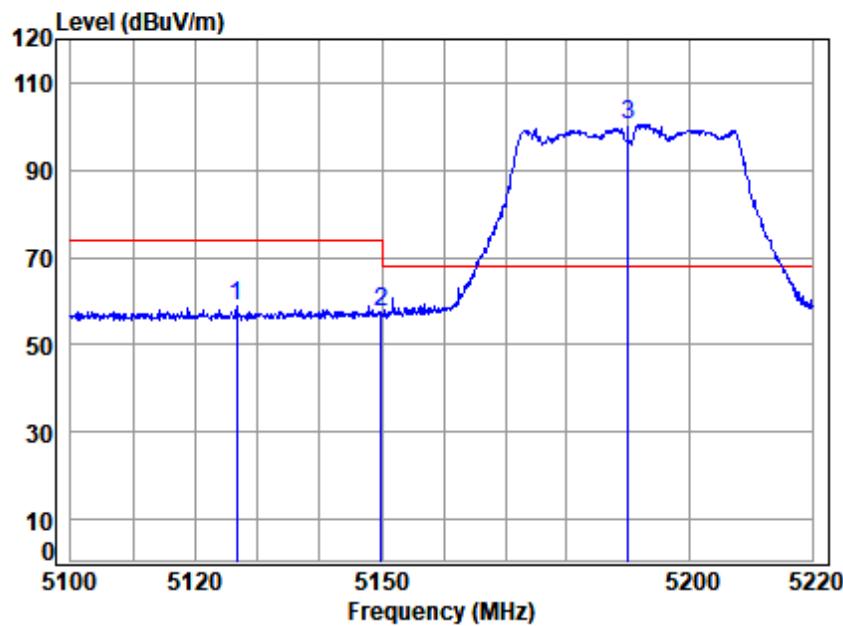
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Test Mode: 04; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low

**Condition:** 3m HORIZONTAL**Job No** : 00164TL/00165TL**Mode** : 5190 Band edge
: 5G Wi-Fi 11n40

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	5126.638	10.05	32.35	30.85	47.27	58.82	74.00 -15.18 peak
2	5149.980	10.14	32.40	30.84	45.59	57.29	74.00 -16.71 peak
3 pp	5190.000	10.29	32.48	30.82	88.63	100.58	68.20 32.38 peak

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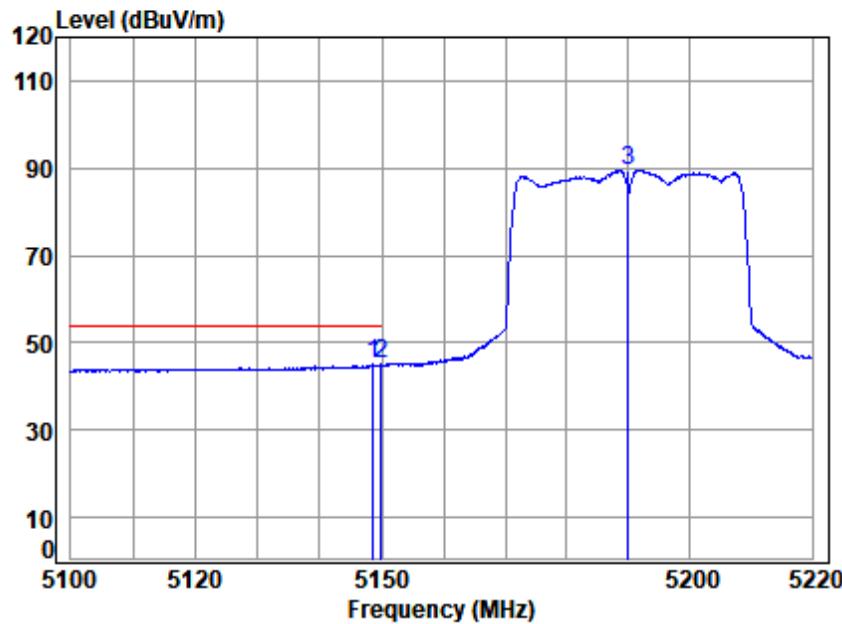
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Test Mode: 04; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low

**Condition: 3m HORIZONTAL****Job No : 00164TL/00165TL****Mode : 5190 Band edge
: 5G Wi-Fi 11n40**

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level		Limit Line	Over Limit	Remark
				Level	dBuV			
1 pp	5148.623	10.13	32.40	30.84	33.39	45.08	54.00	-8.92 Average
2	5149.980	10.14	32.40	30.84	33.33	45.03	54.00	-8.97 Average
3	5190.000	10.29	32.48	30.82	77.63	89.58	-----	----- Average

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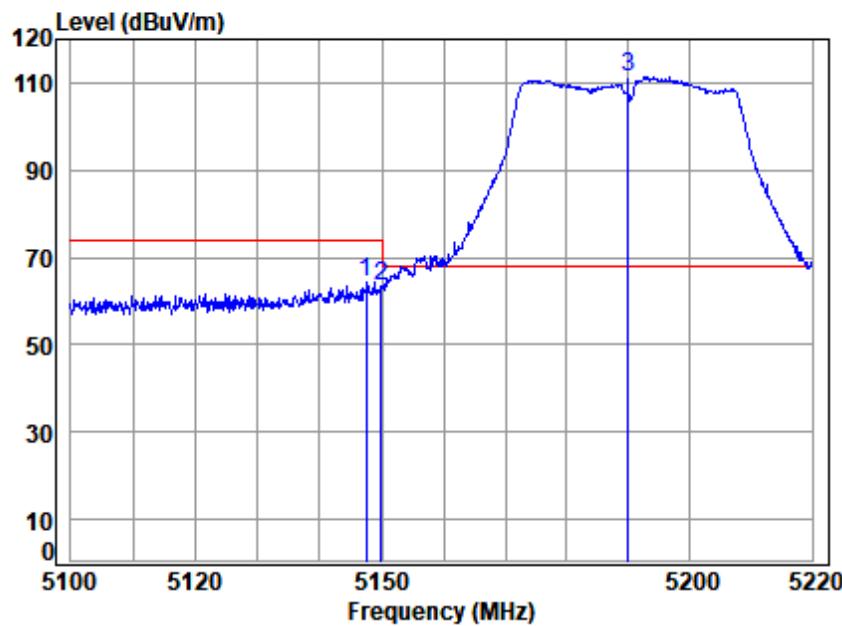
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Test Mode: 04; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low

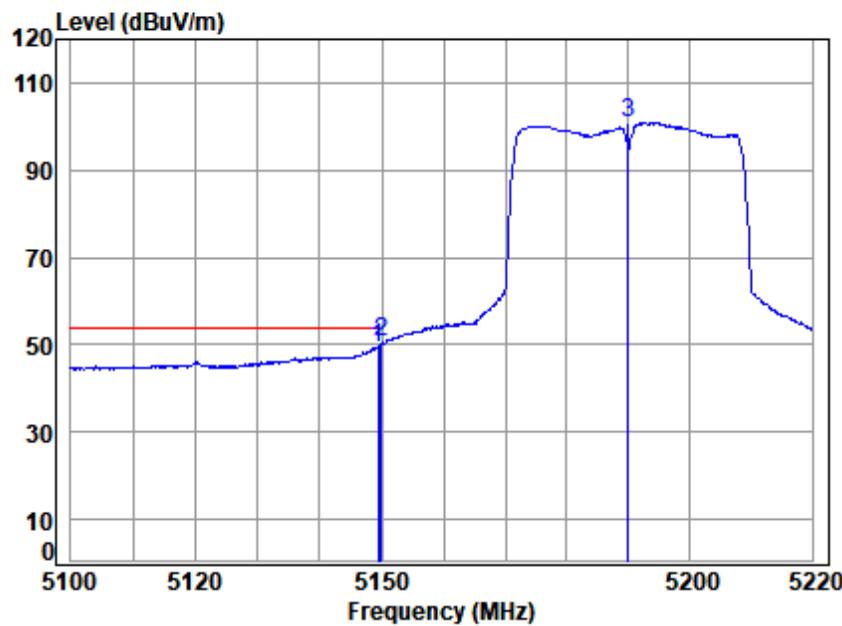
**Condition: 3m VERTICAL****Job No : 00164TL/00165TL****Mode : 5190 Band edge**
: 5G Wi-Fi 11n40

Freq	Cable	Ant	Preamp	Read	Limit		Over	Remark
	Loss	Factor	Factor	Level	Level	Line	Limit	
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5147.545	10.13	32.40	30.84	52.63	64.32	74.00	-9.68 Peak
2	5149.980	10.14	32.40	30.84	51.83	63.53	74.00	-10.47 Peak
3 pp	5190.000	10.29	32.48	30.82	99.28	111.23	68.20	43.03 Peak

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Test Mode: 04; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



Condition: 3m VERTICAL

Job No : 00164TL/00165TL

Mode : 5190 Band edge
: 5G Wi-Fi 11n40

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark	
	Loss	Factor	Factor	Level	Level	Line		
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5149.461	10.14	32.40	30.84	37.78	49.48	54.00	-4.52 Average
2 pp	5149.980	10.14	32.40	30.84	38.88	50.58	54.00	-3.42 Average
3	5190.000	10.29	32.48	30.82	88.89	100.84	-----	----- Average

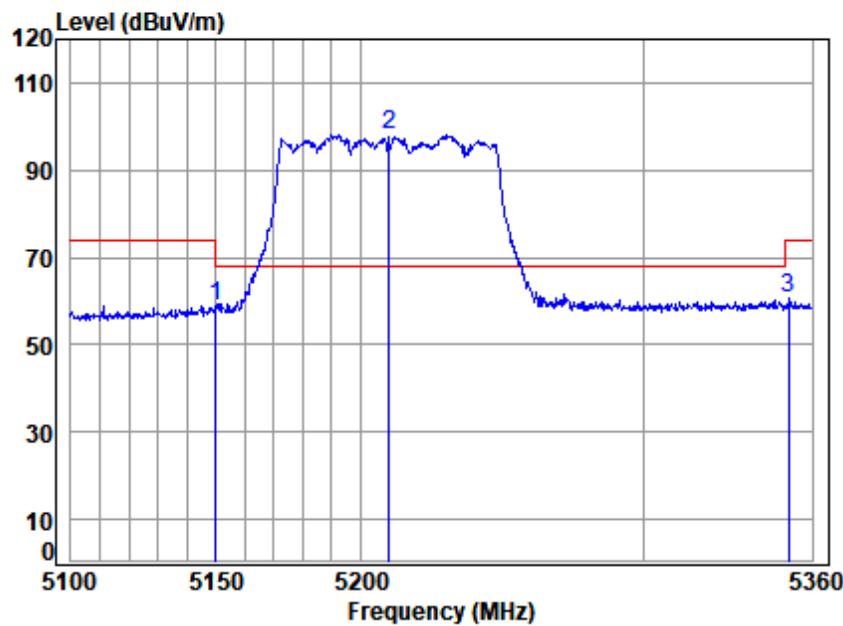
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Test Mode: 04; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:80MHz; Channel:middle

**Condition:** 3m HORIZONTAL**Job No :** 00164TL/00165TL**Mode :** 5210 Band edge**:** 5G Wi-Fi 11ac80

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	Loss	Factor	Factor	Level			
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5149.690	10.14	32.40	30.84	47.26	58.96	74.00 -15.04 peak
2 pp	5210.000	10.32	32.52	30.82	86.14	98.16	68.20 29.96 peak
3	5351.478	10.46	32.80	30.76	47.97	60.47	74.00 -13.53 peak

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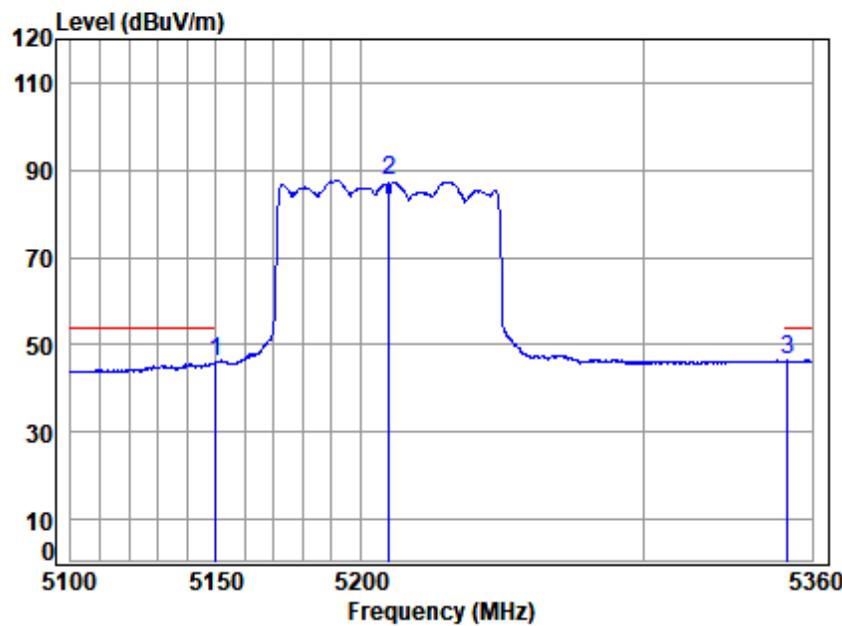


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Test Mode: 04; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:80MHz; Channel:middle



Condition: 3m HORIZONTAL

Job No : 00164TL/00165TL

Mode : 5210 Band edge

: 5G Wi-Fi 11ac80

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5149.947	10.14	32.40	30.84	34.36	46.06	54.00 -7.94 Average
2	5210.000	10.32	32.52	30.82	75.54	87.56	----- ----- Average
3 pp	5351.212	10.45	32.80	30.76	33.90	46.39	54.00 -7.61 Average

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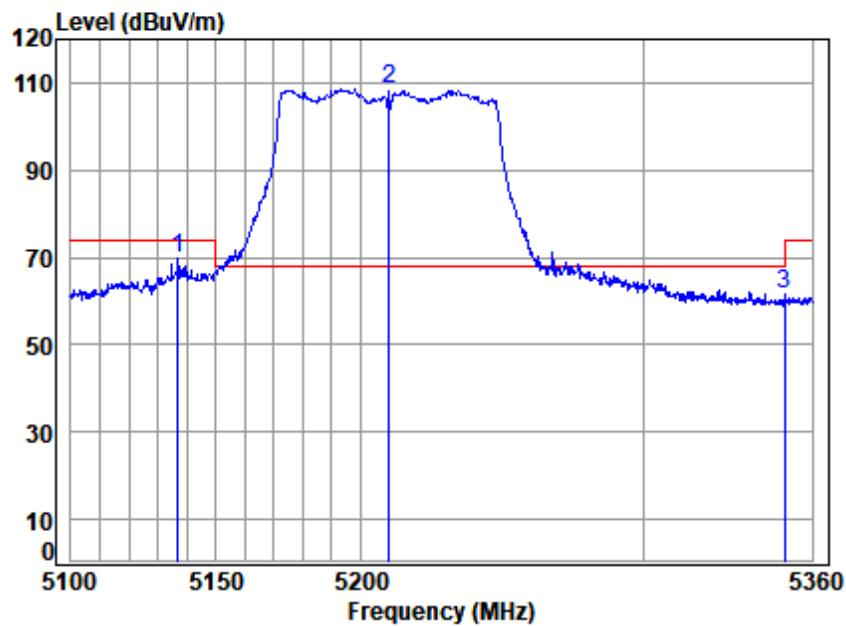
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Test Mode: 04; Polarity: Vertical; Modulation:802.11ac; Bandwidth:80MHz; Channel:middle

**Condition: 3m VERTICAL****Job No : 00164TL/00165TL****Mode : 5210 Band edge
: 5G Wi-Fi 11ac80**

Freq	Cable	Ant	Preamp	Read	Limit		Over	Remark
	Loss	Factor	Factor	Level	Level	Line	Limit	
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5136.903	10.09	32.37	30.85	58.39	70.00	74.00	-4.00 Peak
2 pp	5210.000	10.32	32.52	30.82	96.78	108.80	68.20	40.60 Peak
3	5350.148	10.45	32.80	30.76	49.06	61.55	74.00	-12.45 Peak

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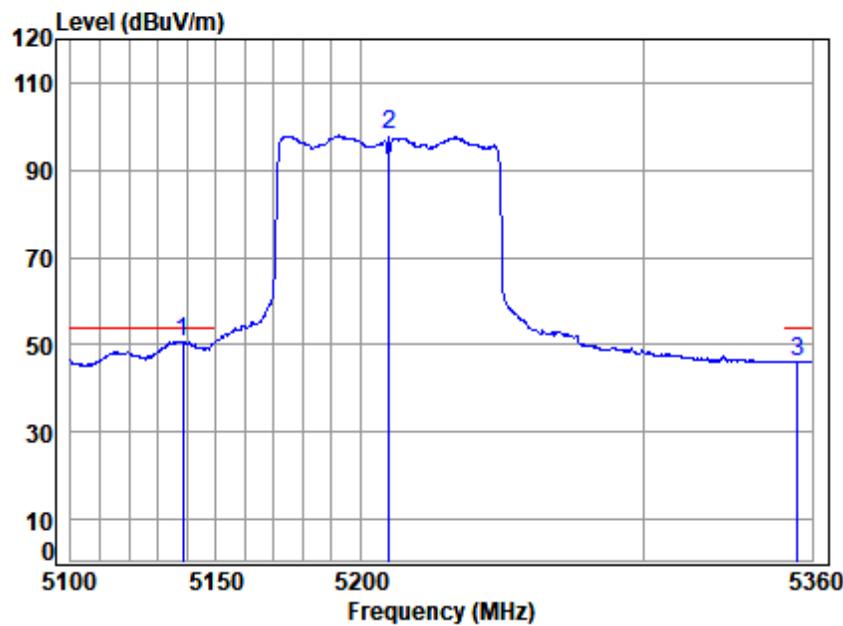
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Test Mode: 04; Polarity: Vertical; Modulation:802.11ac; Bandwidth:80MHz; Channel:middle



Condition: 3m VERTICAL

Job No : 00164TL/00165TL

Mode : 5210 Band edge

: 5G Wi-Fi 11ac80

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1 pp	5138.436	10.10	32.38	30.84	39.18	50.82	54.00 -3.18 Average
2	5210.000	10.32	32.52	30.82	85.86	97.88	----- ----- Average
3	5354.672	10.47	32.80	30.76	33.74	46.25	54.00 -7.75 Average

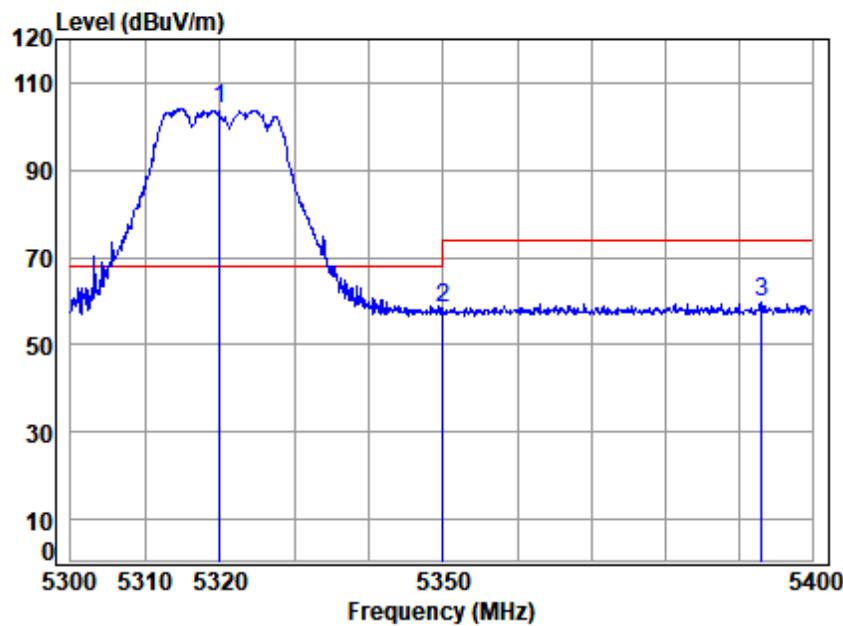


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Test Mode: 05; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High

**Condition:** 3m HORIZONTAL**Job No** : 00164TL/00165TL**Mode** : 5320 Band edge
: 5G Wi-Fi 11a

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark	
	MHz	Loss	Factor	Level	Level	Line		
1 pp	5320.000	10.35	32.74	30.77	91.87	104.19	68.20	35.99 peak
2	5350.020	10.45	32.80	30.76	45.91	58.40	74.00	-15.60 peak
3	5393.141	10.60	32.80	30.74	46.89	59.55	74.00	-14.45 peak

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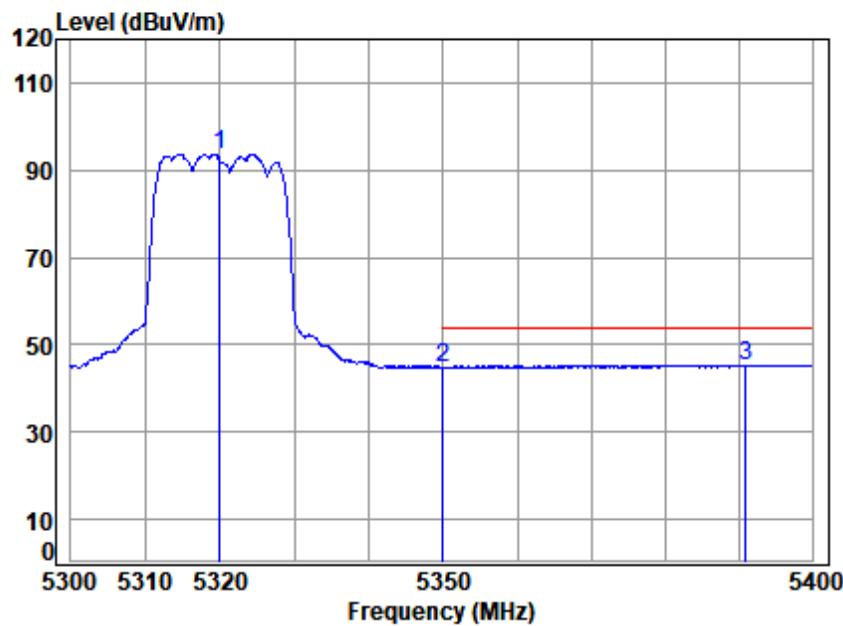
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Test Mode: 05; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High



Condition: 3m HORIZONTAL

Job No : 00164TL/00165TL

Mode : 5320 Band edge
: 5G Wi-Fi 11a

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	5320.000	10.35	32.74	30.77	81.40	93.72	-----	-----	Average
2	5350.020	10.45	32.80	30.76	32.44	44.93	54.00	-9.07	Average
3 pp	5390.923	10.59	32.80	30.74	32.69	45.34	54.00	-8.66	Average

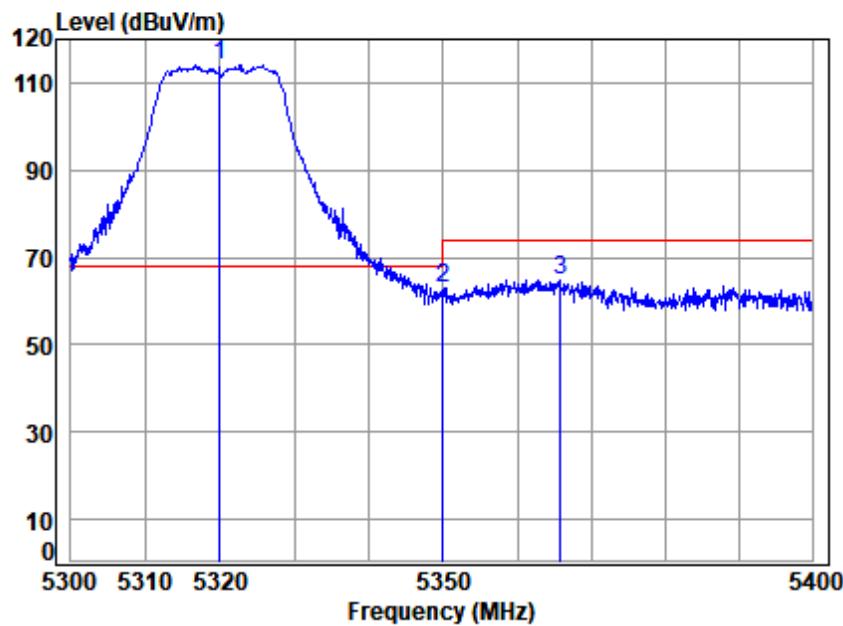
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Test Mode: 05; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High

**Condition: 3m VERTICAL****Job No : 00164TL/00165TL**
Mode : 5320 Band edge
: 5G Wi-Fi 11a

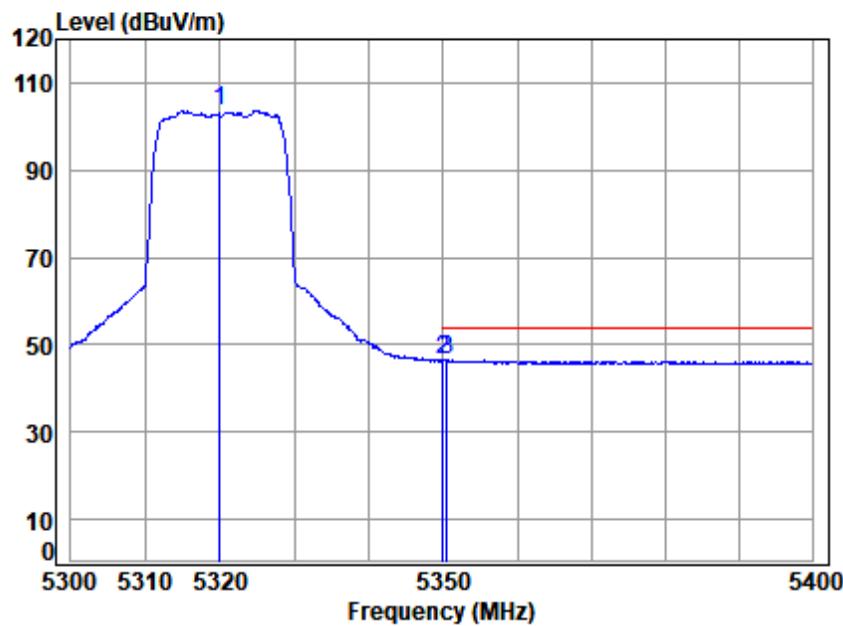
Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level		Limit Line	Over Limit	Remark
				Level	Level			
1 pp	5320.000	10.35	32.74	30.77	101.75	114.07	68.20	45.87 Peak
2	5350.020	10.45	32.80	30.76	50.49	62.98	74.00	-11.02 Peak
3	5365.790	10.50	32.80	30.75	52.15	64.70	74.00	-9.30 Peak

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Test Mode: 05; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High

**Condition:** 3m VERTICAL**Job No** : 00164TL/00165TL**Mode** : 5320 Band edge
: 5G Wi-Fi 11a

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	5320.000	10.35	32.74	30.77	91.27	103.59	----- Average
2 pp	5350.020	10.45	32.80	30.76	33.97	46.46	54.00 -7.54 Average
3	5350.566	10.45	32.80	30.76	33.92	46.41	54.00 -7.59 Average

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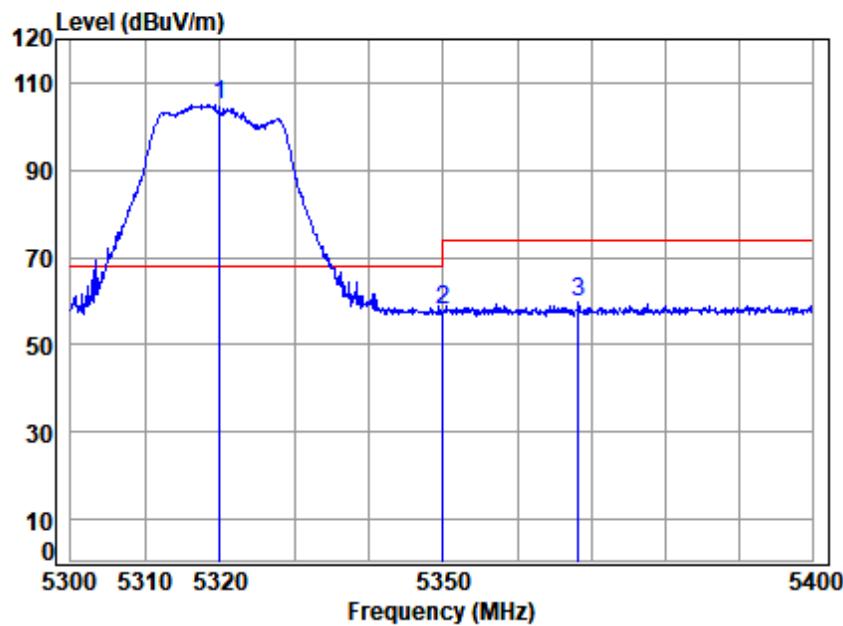
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Test Mode: 05; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High

**Condition:** 3m HORIZONTAL**Job No :** 00164TL/00165TL**Mode :** 5320 Band edge

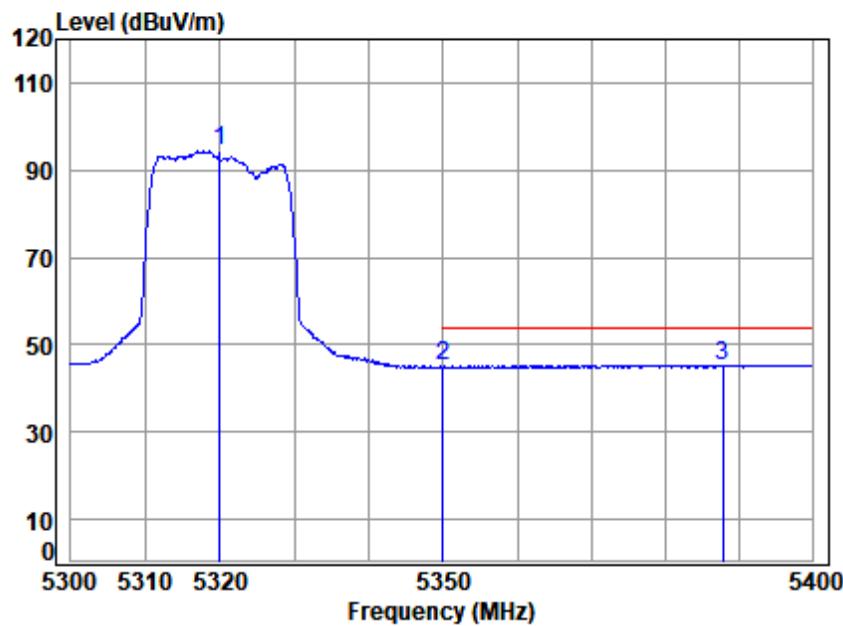
: 5G Wi-Fi 11n20

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level		Limit Line	Over Limit	Remark
				Level	Level			
1 pp	5320.000	10.35	32.74	30.77	92.74	105.06	68.20	36.86 peak
2	5350.020	10.45	32.80	30.76	45.44	57.93	74.00	-16.07 peak
3	5368.298	10.51	32.80	30.75	47.00	59.56	74.00	-14.44 peak

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Test Mode: 05; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High

**Condition:** 3m HORIZONTAL**Job No** : 00164TL/00165TL**Mode** : 5320 Band edge
: 5G Wi-Fi 11n20

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	5320.000	10.35	32.74	30.77	82.02	94.34	----- Average
2	5350.020	10.45	32.80	30.76	32.49	44.98	54.00 -9.02 Average
3 pp	5387.800	10.58	32.80	30.74	32.76	45.40	54.00 -8.60 Average

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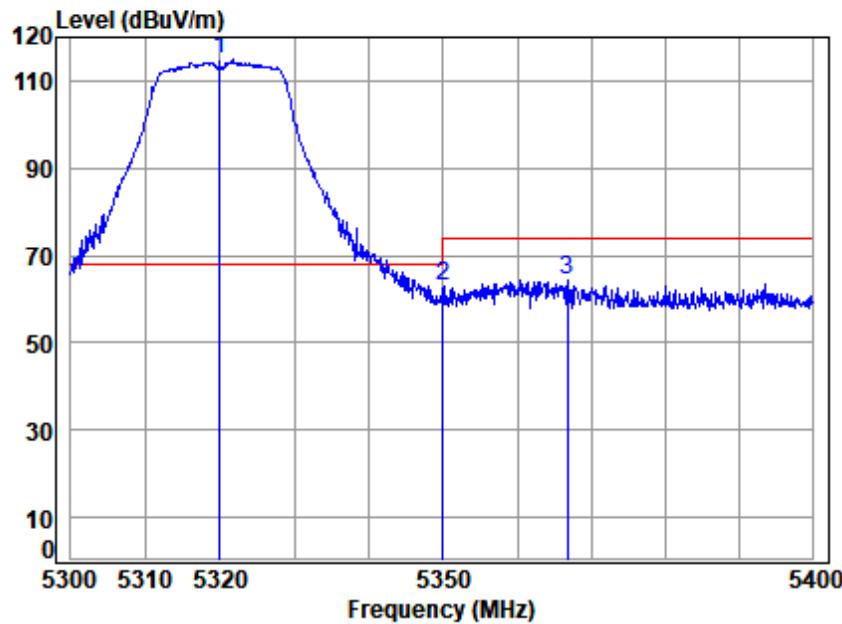
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Test Mode: 05; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High

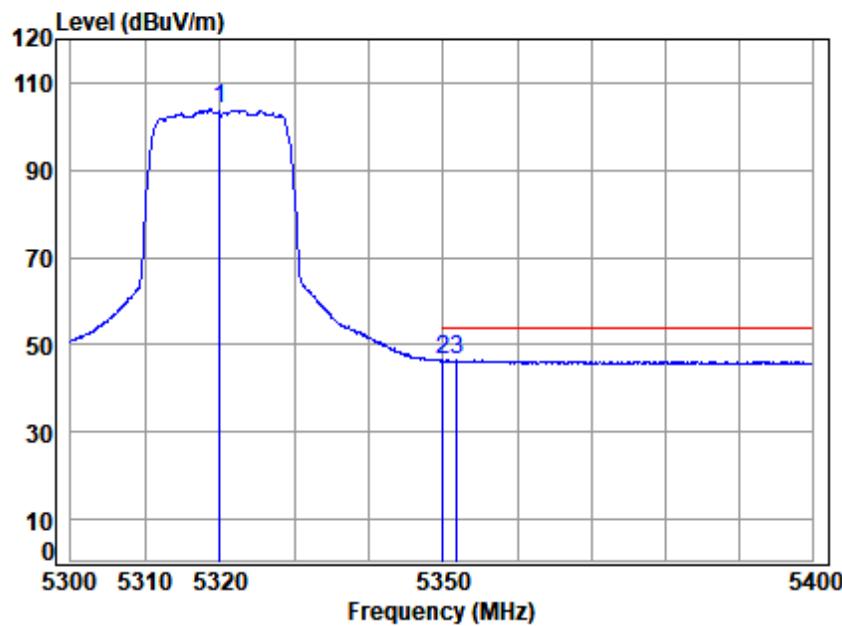
**Condition: 3m VERTICAL****Job No : 00164TL/00165TL**
Mode : 5320 Band edge
: 5G Wi-Fi 11n20

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark	
	MHz	Loss	Factor	Level	Level	Line		
1 pp	5320.000	10.35	32.74	30.77	102.75	115.07	68.20	46.87 Peak
2	5350.020	10.45	32.80	30.76	50.30	62.79	74.00	-11.21 Peak
3	5366.793	10.51	32.80	30.75	51.86	64.42	74.00	-9.58 Peak

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Test Mode: 05; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High

**Condition:** 3m VERTICAL**Job No :** 00164TL/00165TL**Mode :** 5320 Band edge
: 5G Wi-Fi 11n20

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	5320.000	10.35	32.74	30.77	91.59	103.91	----- Average
2	5350.020	10.45	32.80	30.76	33.82	46.31	54.00 -7.69 Average
3 pp	5351.867	10.46	32.80	30.76	33.88	46.38	54.00 -7.62 Average

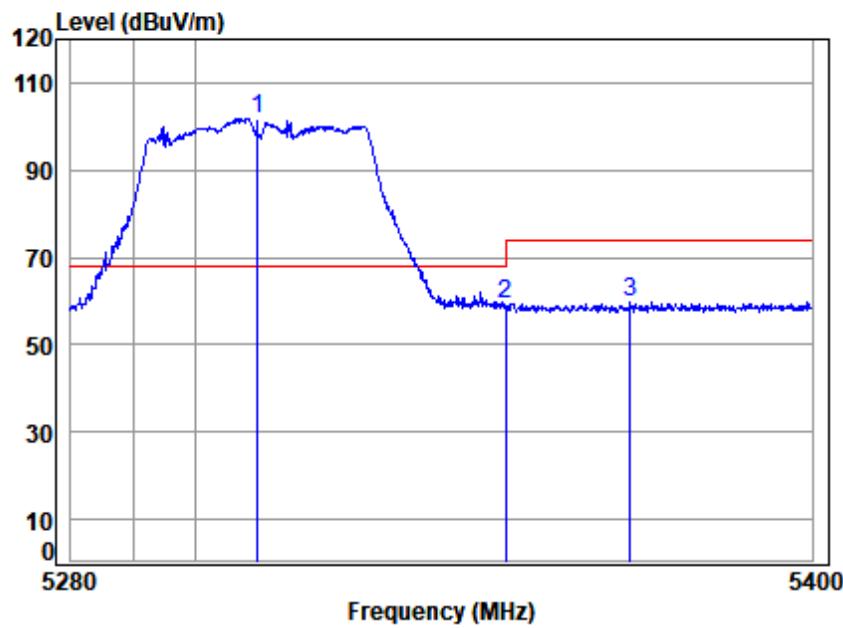
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Test Mode: 05; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High



Condition: 3m HORIZONTAL

Job No : 00164TL/00165TL

Mode : 5310 Band edge
: 5G Wi-Fi 11n40

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark	
	MHz	Loss	Factor	Level	Level	Line		
1 pp	5310.000	10.31	32.72	30.78	89.66	101.91	68.20	33.71 peak
2	5350.020	10.45	32.80	30.76	47.01	59.50	74.00	-14.50 peak
3	5370.229	10.52	32.80	30.75	47.28	59.85	74.00	-14.15 peak

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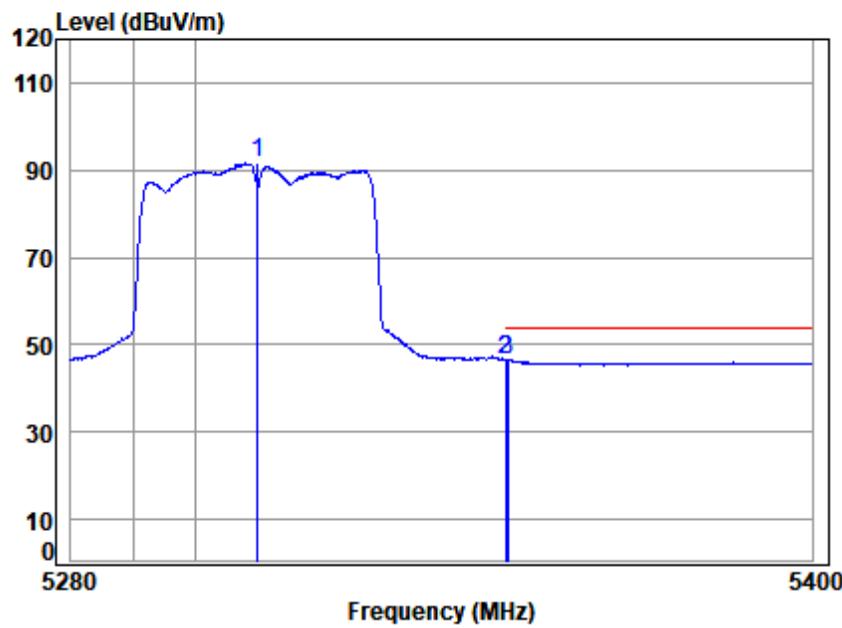
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Test Mode: 05; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High



Condition: 3m HORIZONTAL

Job No : 00164TL/00165TL

Mode : 5310 Band edge
: 5G Wi-Fi 11n40

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5310.000	10.31	32.72	30.78	79.24	91.49	----- Average
2 pp	5350.020	10.45	32.80	30.76	34.16	46.65	54.00 -7.35 Average
3	5350.474	10.45	32.80	30.76	34.12	46.61	54.00 -7.39 Average

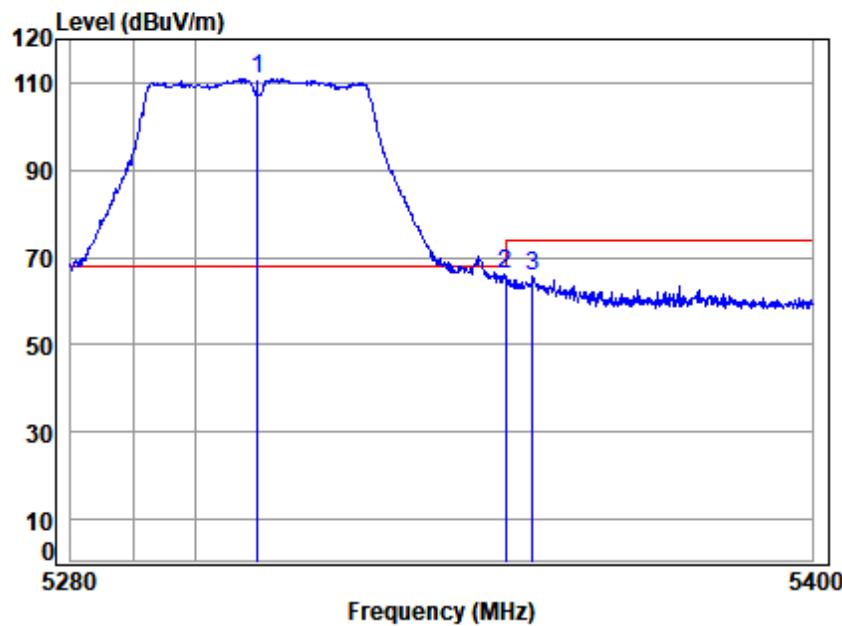
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Test Mode: 05; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:High



Condition: 3m VERTICAL

Job No : 00164TL/00165TL
Mode : 5310 Band edge
: 5G Wi-Fi 11n40

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark	
	MHz	Loss	Factor	Level	Level	Line		
1 pp	5310.000	10.31	32.72	30.78	98.78	111.03	68.20	42.83 Peak
2	5350.020	10.45	32.80	30.76	53.55	66.04	74.00	-7.96 Peak
3	5354.443	10.47	32.80	30.76	53.27	65.78	74.00	-8.22 Peak

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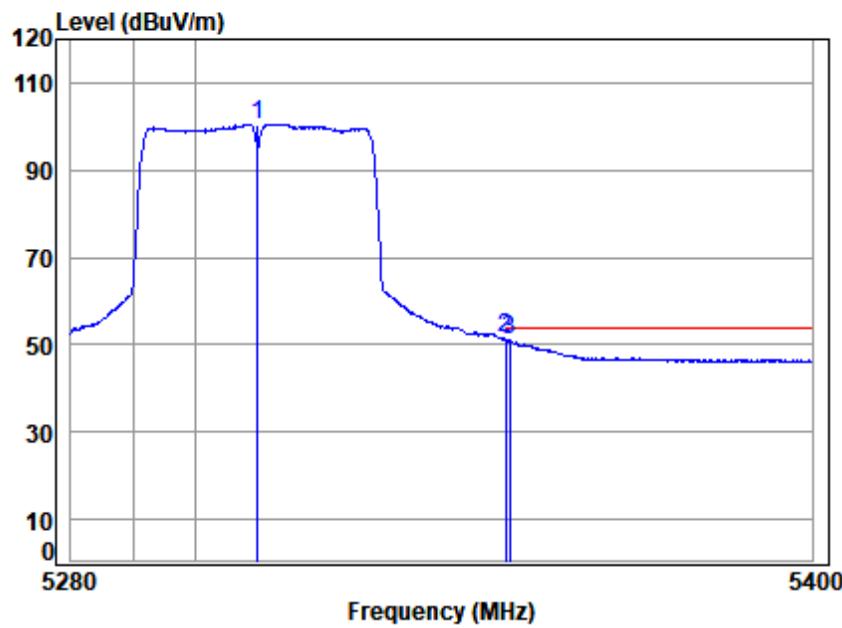
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Test Mode: 05; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:High

**Condition:** 3m VERTICAL**Job No :** 00164TL/00165TL**Mode :** 5310 Band edge
: 5G Wi-Fi 11n40

	Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
		Loss	Factor	Factor	Level	Level	Line	
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5310.000	10.31	32.72	30.78	88.28	100.53	-----	Average
2 pp	5350.020	10.45	32.80	30.76	38.90	51.39	54.00	-2.61 Average
3	5350.714	10.45	32.80	30.76	38.59	51.08	54.00	-2.92 Average

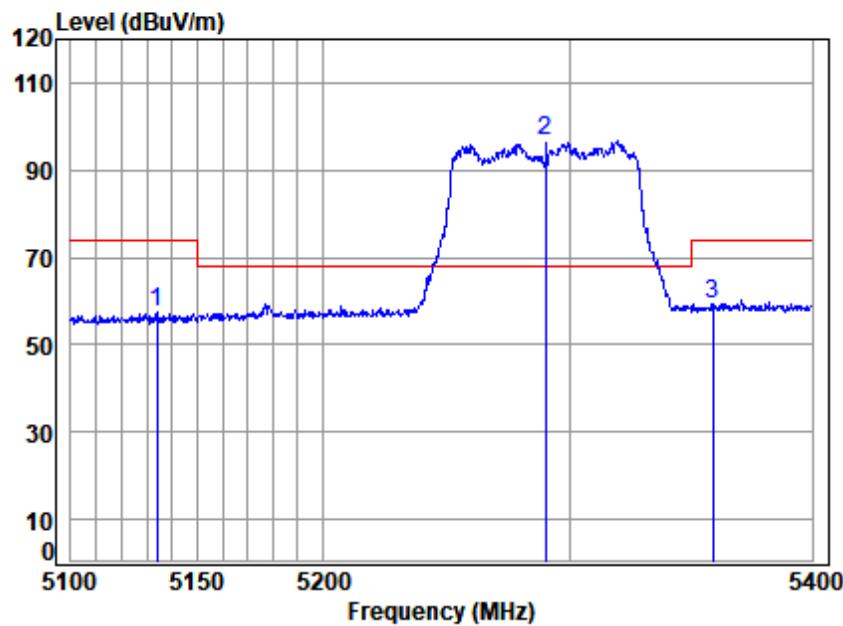


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Test Mode: 05; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:80MHz; Channel:middle



Condition: 3m HORIZONTAL

Job No : 00164TL/00165TL

Mode : 5290 Band edge

: 5G Wi-Fi 11ac80

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	5133.927	10.08	32.37	30.85	45.73	57.33	74.00 -16.67 peak
2 pp	5290.000	10.28	32.68	30.78	84.67	96.85	68.20 28.65 peak
3	5358.798	10.48	32.80	30.76	46.95	59.47	74.00 -14.53 peak

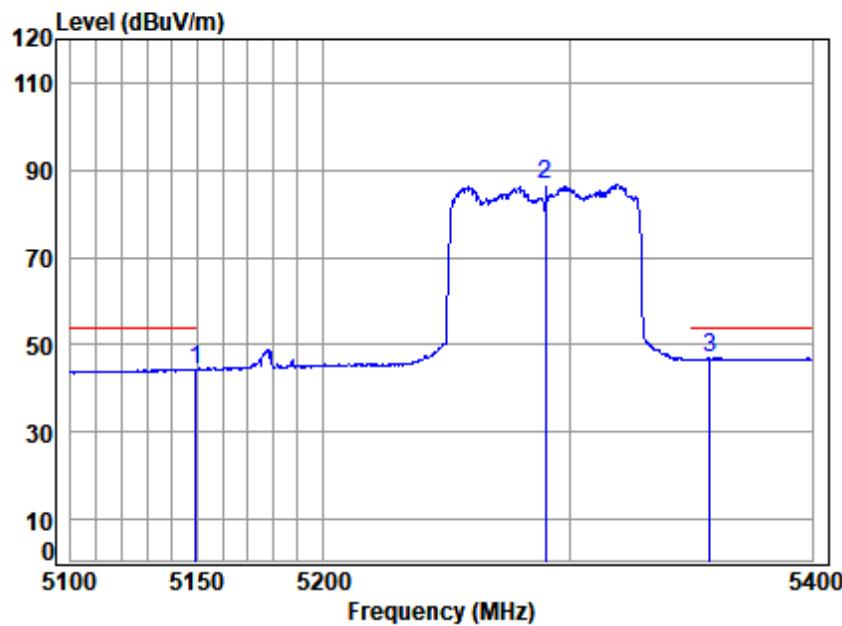
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Test Mode: 05; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:80MHz; Channel:middle



Condition: 3m HORIZONTAL

Job No : 00164TL/00165TL

Mode : 5290 Band edge

: 5G Wi-Fi 11ac80

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	5149.503	10.14	32.40	30.84	32.69	44.39	54.00 -9.61 Average
2	5290.000	10.28	32.68	30.78	74.65	86.83	----- ----- Average
3 pp	5357.573	10.48	32.80	30.76	34.46	46.98	54.00 -7.02 Average

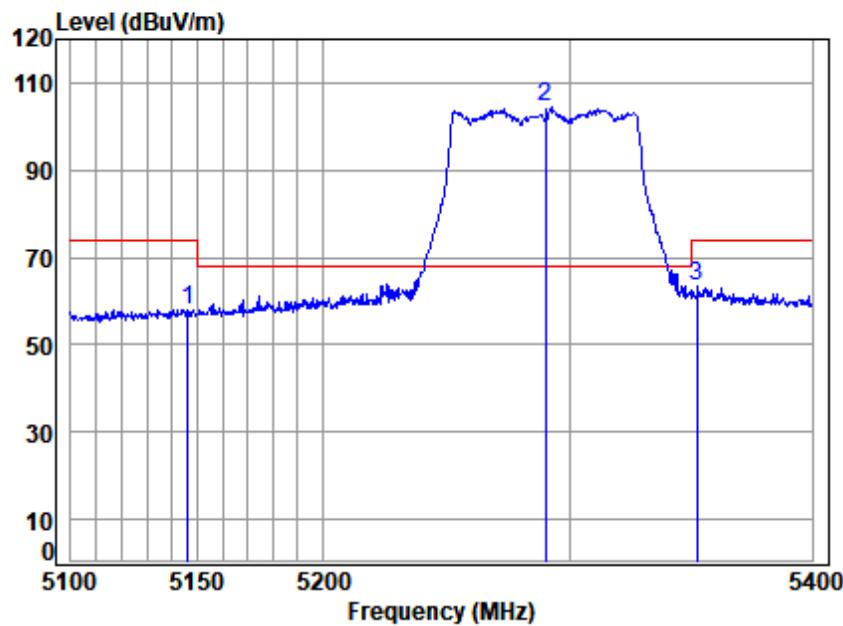


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Test Mode: 05; Polarity: Vertical; Modulation:802.11ac; Bandwidth:80MHz; Channel:middle



Condition: 3m VERTICAL

Job No : 00164TL/00165TL

Mode : 5290 Band edge

: 5G Wi-Fi 11ac80

Freq	Cable	Ant	Preamp	Read	Limit		Over	Remark
	Loss	Factor	Factor	Level	Level	Line	Limit	
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5146.267	10.13	32.39	30.84	46.29	57.97	74.00	-16.03 Peak
2 pp	5290.000	10.28	32.68	30.78	92.34	104.52	68.20	36.32 Peak
3	5352.370	10.46	32.80	30.76	50.86	63.36	74.00	-10.64 Peak

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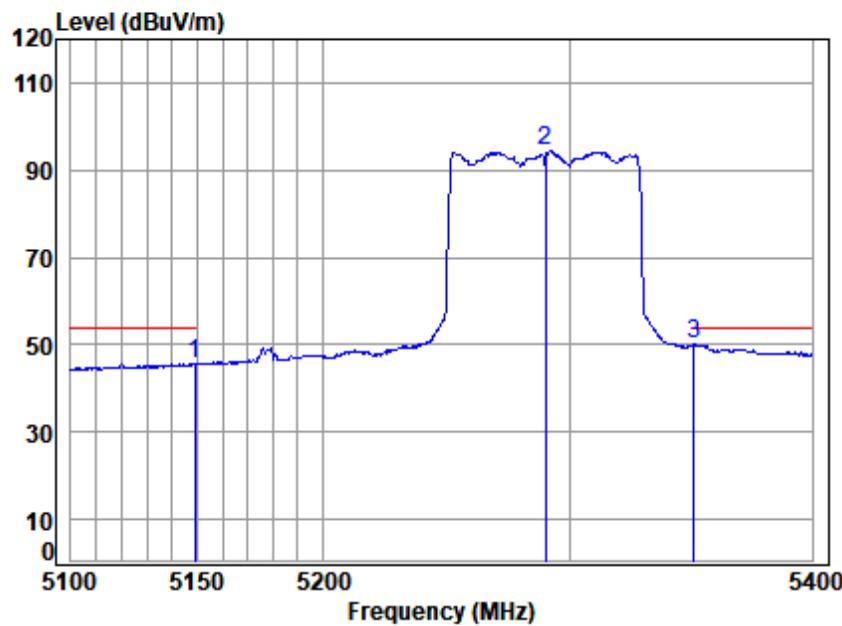
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Test Mode: 05; Polarity: Vertical; Modulation:802.11ac; Bandwidth:80MHz; Channel:middle

**Condition: 3m VERTICAL****Job No : 00164TL/00165TL****Mode : 5290 Band edge
: 5G Wi-Fi 11ac80**

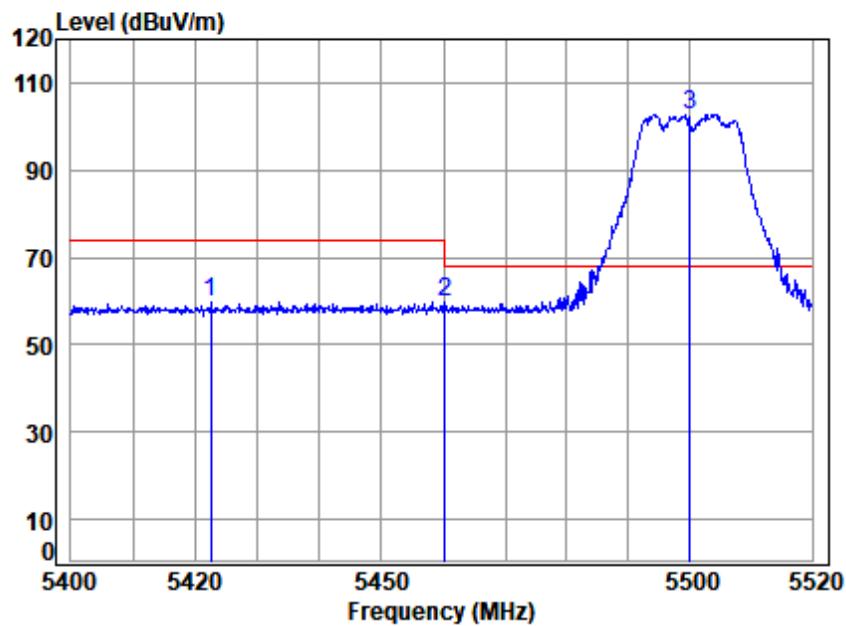
Freq	Cable	Ant	Preamp	Read	Limit		Over	Remark
	Loss	Factor	Factor	Level	Level	Line	Limit	
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5148.915	10.14	32.40	30.84	34.02	45.72	54.00	-8.28 Average
2	5290.000	10.28	32.68	30.78	82.25	94.43	-----	----- Average
3 pp	5350.840	10.45	32.80	30.76	37.57	50.06	54.00	-3.94 Average



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Test Mode: 06; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Condition: 3m HORIZONTAL

Job No : 00164TL/00165TL

Mode : 5500 Band edge
: 5G Wi-Fi 11a

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	5422.479	10.61	32.84	30.73	47.23	59.95	74.00 -14.05 peak
2	5460.271	10.60	32.90	30.72	46.95	59.73	68.20 -8.47 peak
3 pp	5500.000	10.58	32.90	30.70	90.07	102.85	68.20 34.65 peak

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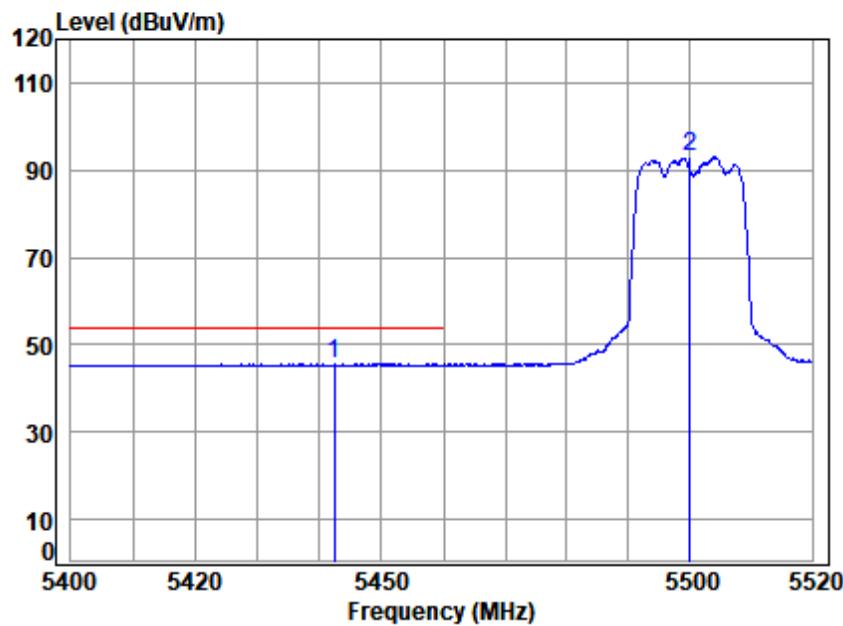
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Test Mode: 06; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Condition: 3m HORIZONTAL

Job No : 00164TL/00165TL

Mode : 5500 Band edge
: 5G Wi-Fi 11a

Freq	Cable	Ant	Preamp	Read	Limit		Over	Remark
	Loss	Factor	Factor	Level	Level	Line	Limit	
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 pp	5442.418	10.60	32.88	30.72	32.78	45.54	54.00	-8.46 Average
2	5500.000	10.58	32.90	30.70	80.11	92.89	-----	----- Average

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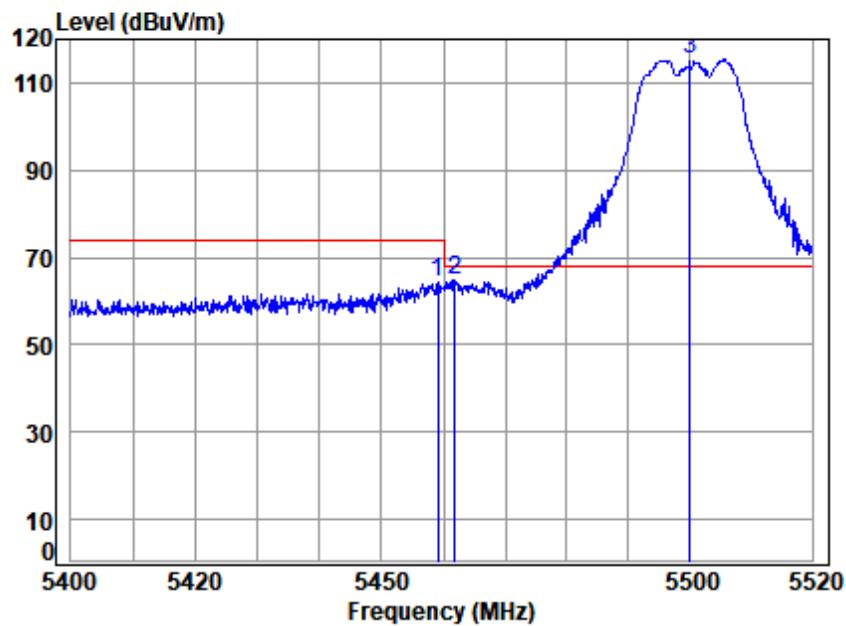
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Test Mode: 06; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Condition: 3m VERTICAL

Job No : 00164TL/00165TL

Mode : 5500 Band edge
: 5G Wi-Fi 11a

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	5459.070	10.60	32.90	30.72	51.53	64.31	74.00 -9.69 Peak
2	5461.831	10.60	32.90	30.72	52.08	64.86	68.20 -3.34 peak
3 pp	5500.000	10.58	32.90	30.70	102.88	115.66	68.20 47.46 Peak

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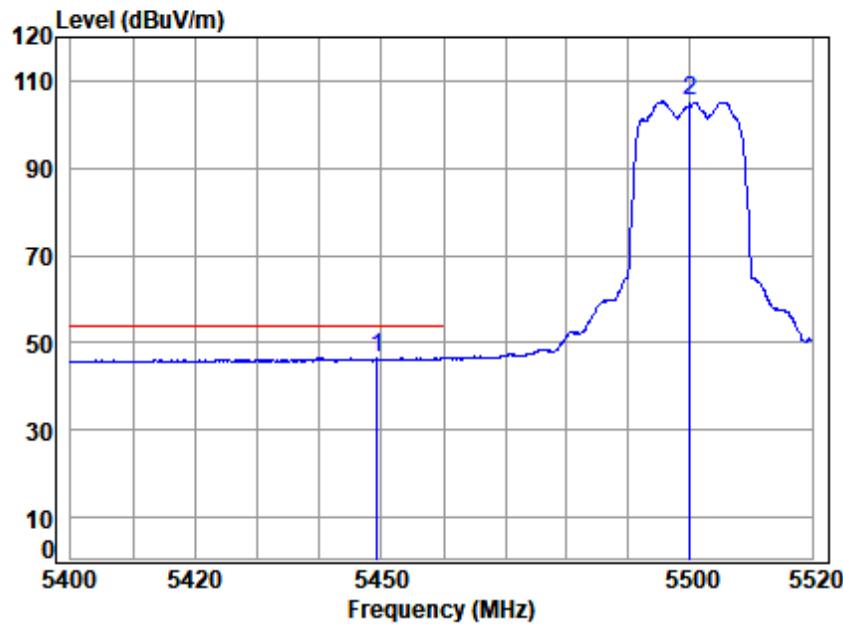
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Test Mode: 06; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low

**Condition:** 3m VERTICAL**Job No :** 00164TL/00165TL**Mode :** 5500 Band edge
: 5G Wi-Fi 11a

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 pp	5449.241	10.60	32.90	30.72	33.87	46.65	54.00 -7.35 Average
2	5500.000	10.58	32.90	30.70	92.50	105.28	----- ----- Average

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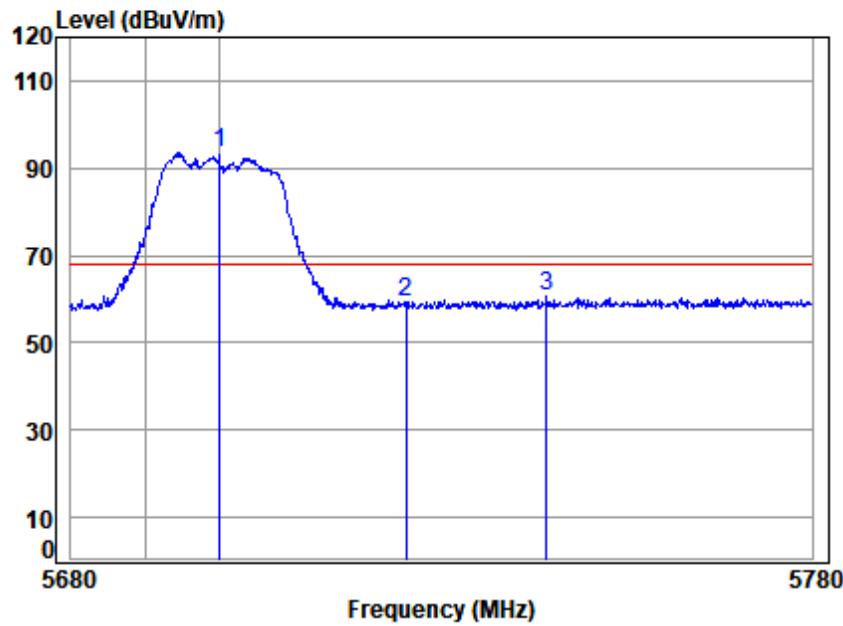
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Test Mode: 06; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High

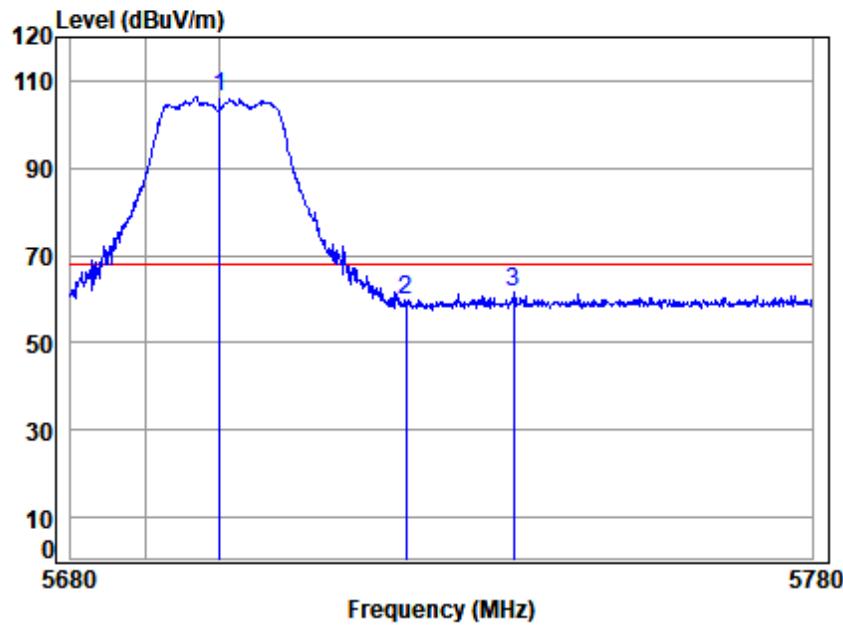
**Condition: 3m HORIZONTAL****Job No : 00164TL/00165TL****Mode : 5700 Band edge**
: 5G Wi-Fi 11a

Freq	Cable	Ant	Preamp	Read	Limit		Over	Remark
	MHz	Loss	Factor	Level	Level	Line	Limit	
1 pp	5700.000	10.56	33.20	30.62	80.28	93.42	68.20	25.22 peak
2	5725.000	10.68	33.25	30.61	46.15	59.47	68.20	-8.73 peak
3	5744.000	10.76	33.29	30.60	47.23	60.68	68.20	-7.52 peak

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Test Mode: 06; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High

**Condition: 3m VERTICAL****Job No : 00164TL/00165TL****Mode : 5700 Band edge**
: 5G Wi-Fi 11a

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level		Limit Line	Over Limit	Remark
				Level	dBuV			
1 pp	5700.000	10.56	33.20	30.62	93.03	106.17	68.20	37.97 Peak
2	5725.000	10.68	33.25	30.61	46.44	59.76	68.20	-8.44 Peak
3	5739.490	10.74	33.28	30.60	48.16	61.58	68.20	-6.62 Peak

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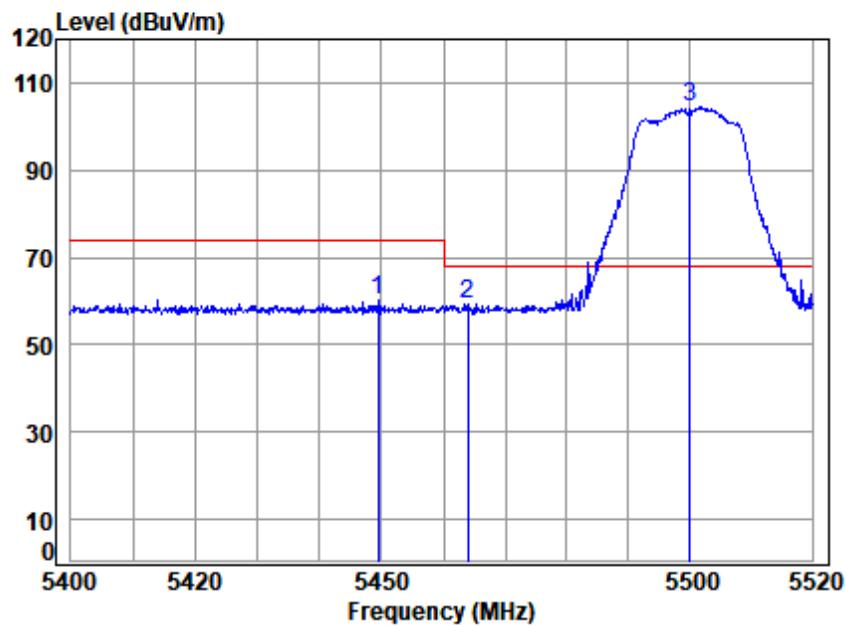
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Test Mode: 06; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Condition: 3m HORIZONTAL

Job No : 00164TL/00165TL

Mode : 5500 Band edge

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	Loss	Factor	Factor	Level	Level	Line	
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5449.480	10.60	32.90	30.72	47.44	60.22	74.00 -13.78 peak
2	5463.872	10.59	32.90	30.71	46.40	59.18	68.20 -9.02 peak
3 pp	5500.000	10.58	32.90	30.70	91.58	104.36	68.20 36.16 peak

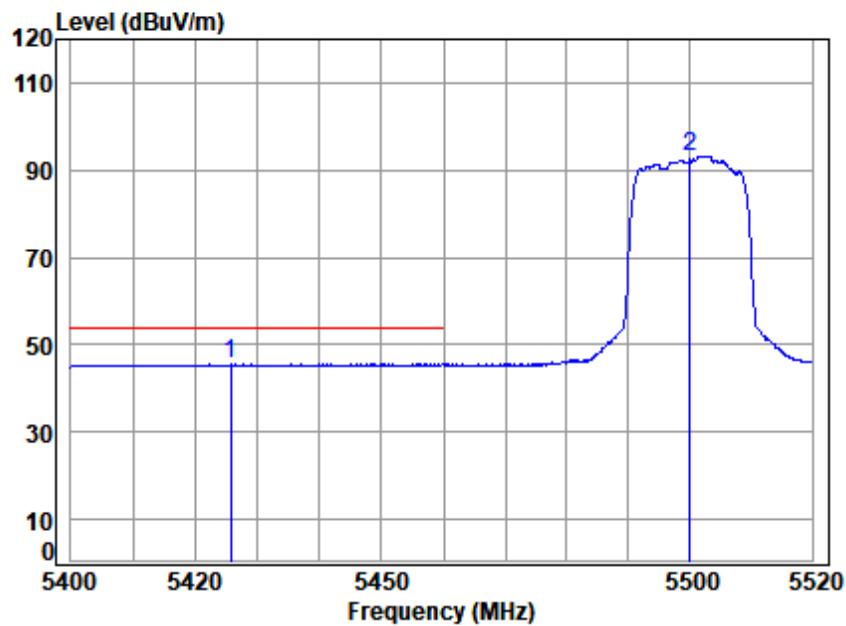
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Test Mode: 06; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low

**Condition:** 3m HORIZONTAL**Job No :** 00164TL/00165TL**Mode :** 5500 Band edge**:** 5G Wi-Fi 11n20

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	Loss	Factor	Factor	Level	Level	Line	
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 pp	5425.697	10.61	32.85	30.73	32.86	45.59	54.00
2	5500.000	10.58	32.90	30.70	80.44	93.22	-----
							Average

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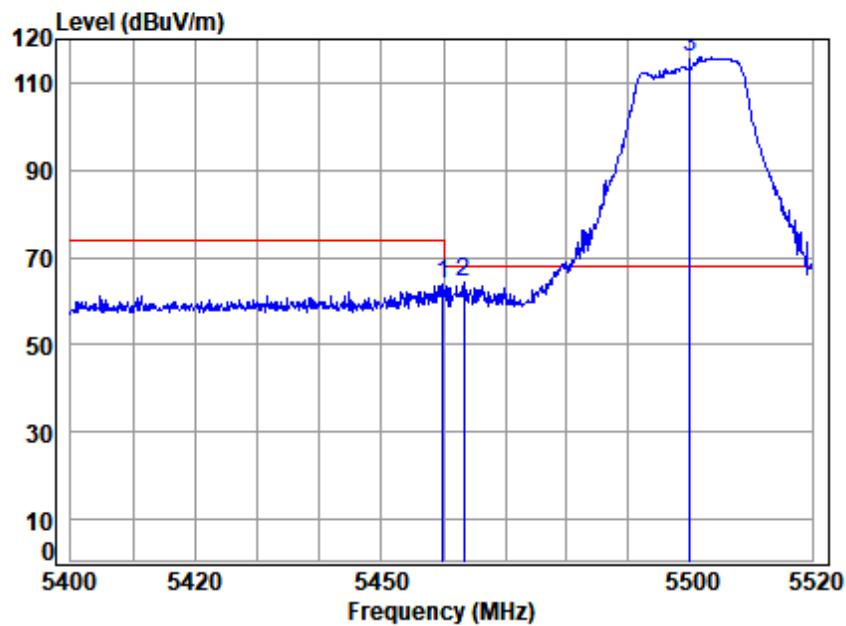
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Test Mode: 06; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Condition: 3m VERTICAL

Job No : 00164TL/00165TL

Mode : 5500 Band edge

: 5G Wi-Fi 11n20

Freq	Cable	Ant	Preamp	Read	Limit		Over	Remark
	Loss	Factor	Factor	Level	Level	Line	Limit	
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5459.910	10.60	32.90	30.72	51.02	63.80	74.00	-10.20 Peak
2	5463.271	10.59	32.90	30.71	51.71	64.49	68.20	-3.71 peak
3 pp	5500.000	10.58	32.90	30.70	103.21	115.99	68.20	47.79 Peak

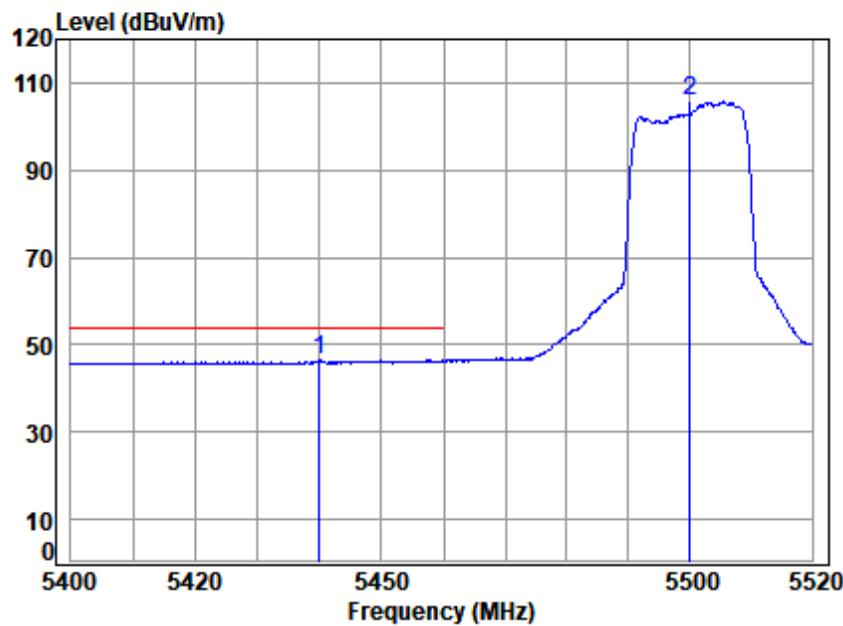


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Test Mode: 06; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low

**Condition:** 3m VERTICAL**Job No :** 00164TL/00165TL**Mode :** 5500 Band edge
: 5G Wi-Fi 11n20

Freq	Cable	Ant	Preamp	Read	Limit		Over	Remark
	MHz	Loss	Factor	Level	Level	Line	Limit	
1 pp	5440.026	10.60	32.88	30.72	33.77	46.53	54.00	-7.47 Average
2	5500.000	10.58	32.90	30.70	92.88	105.66	-----	----- Average

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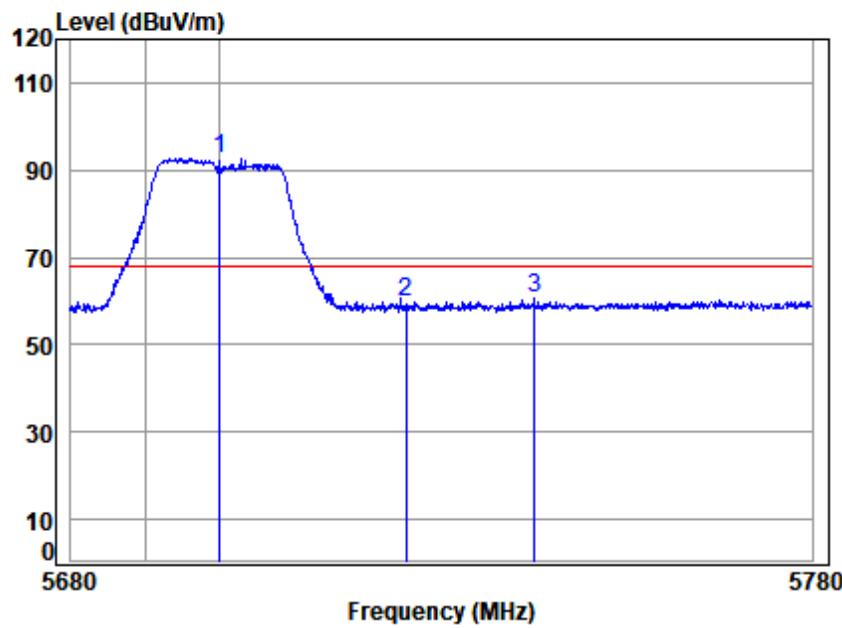
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Test Mode: 06; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High

**Condition: 3m HORIZONTAL****Job No : 00164TL/00165TL****Mode : 5700 Band edge**
: 5G Wi-Fi 11n20

Freq	Cable	Ant	Preamp	Read	Limit		Over	Remark	
	Loss	Factor	Factor	Level	Level	Line	Limit		
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	pp	5700.000	10.56	33.20	30.62	79.69	92.83	68.20	24.63 peak
2		5725.000	10.68	33.25	30.61	46.34	59.66	68.20	-8.54 peak
3		5742.295	10.75	33.28	30.60	47.03	60.46	68.20	-7.74 peak

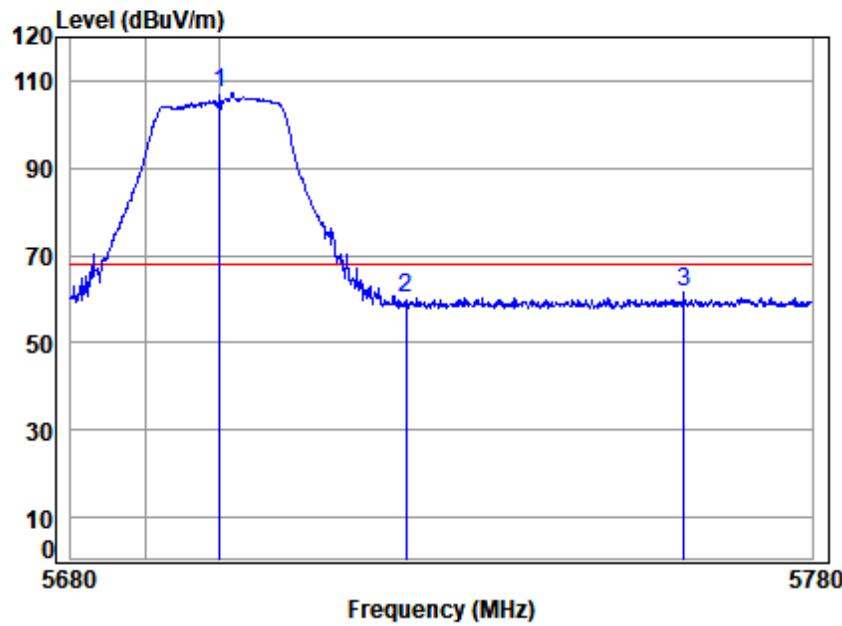


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Test Mode: 06; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High

**Condition: 3m VERTICAL****Job No : 00164TL/00165TL**
Mode : 5700 Band edge
: 5G Wi-Fi 11n20

Freq	Cable	Ant	Preamp	Read	Limit		Over	Remark	
	Loss	Factor	Factor	Level	Level	Line	Limit		
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	pp	5700.000	10.56	33.20	30.62	93.98	107.12	68.20	38.92 Peak
2		5725.000	10.68	33.25	30.61	46.88	60.20	68.20	-8.00 Peak
3		5762.575	10.85	33.33	30.59	47.81	61.40	68.20	-6.80 Peak

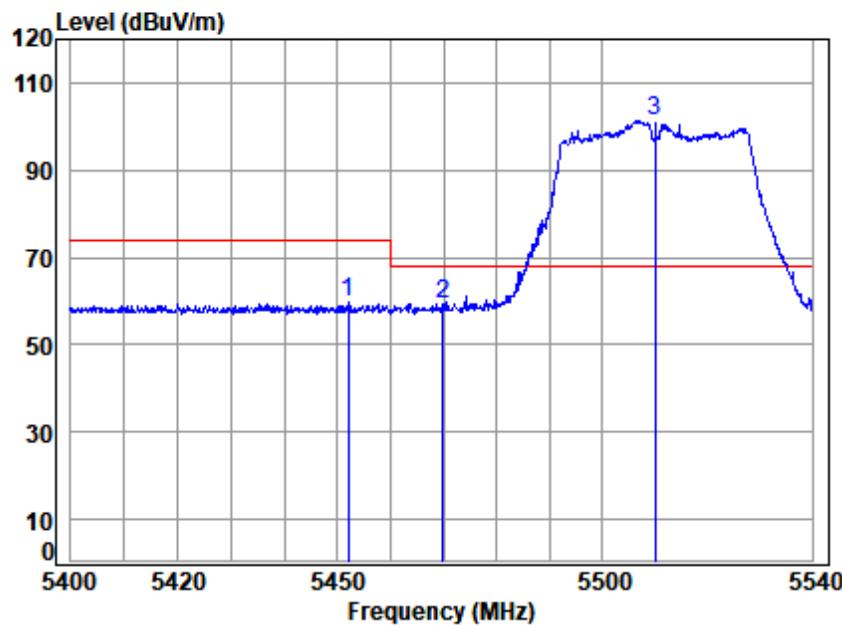


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Test Mode: 06; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



Condition: 3m HORIZONTAL

Job No : 00164TL/00165TL

Mode : 5510 Band edge

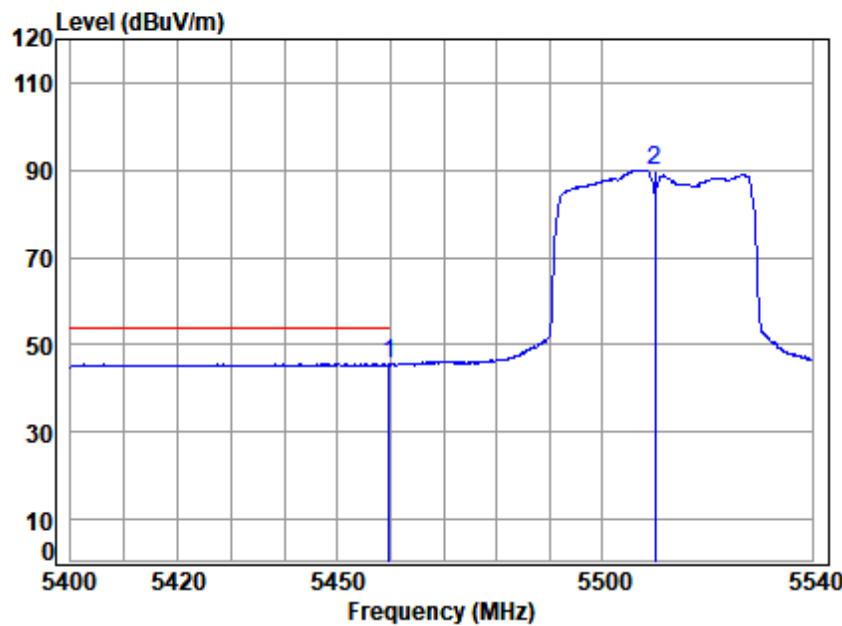
Freq	Cable	Ant	Preamp	Read	Limit		Over	Remark
	Loss	Factor	Factor	Level	Level	Line	Limit	
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5451.941	10.60	32.90	30.72	47.18	59.96	74.00	-14.04 peak
2	5469.832	10.59	32.90	30.71	46.63	59.41	68.20	-8.79 peak
3 pp	5510.000	10.56	32.90	30.70	88.66	101.42	68.20	33.22 peak



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Test Mode: 06; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



Condition: 3m HORIZONTAL

Job No : 00164TL/00165TL

Mode : 5510 Band edge
: 5G Wi-Fi 11n40

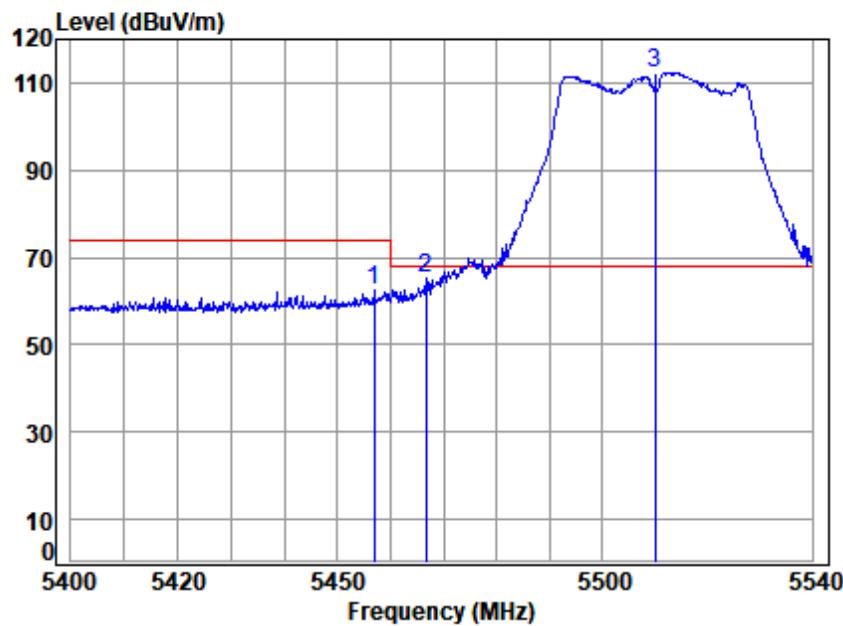
Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 pp	5459.761	10.60	32.90	30.72	32.83	45.61	54.00 -8.39 Average
2	5510.000	10.56	32.90	30.70	77.29	90.05	----- ----- Average



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Test Mode: 06; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



Condition: 3m VERTICAL

Job No : 00164TL/00165TL

Mode : 5510 Band edge
: 5G Wi-Fi 11n40

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	5456.827	10.60	32.90	30.72	49.80	62.58	74.00 -11.42 Peak
2	5466.613	10.59	32.90	30.71	52.40	65.18	68.20 -3.02 Peak
3 pp	5510.000	10.56	32.90	30.70	99.66	112.42	68.20 44.22 Peak

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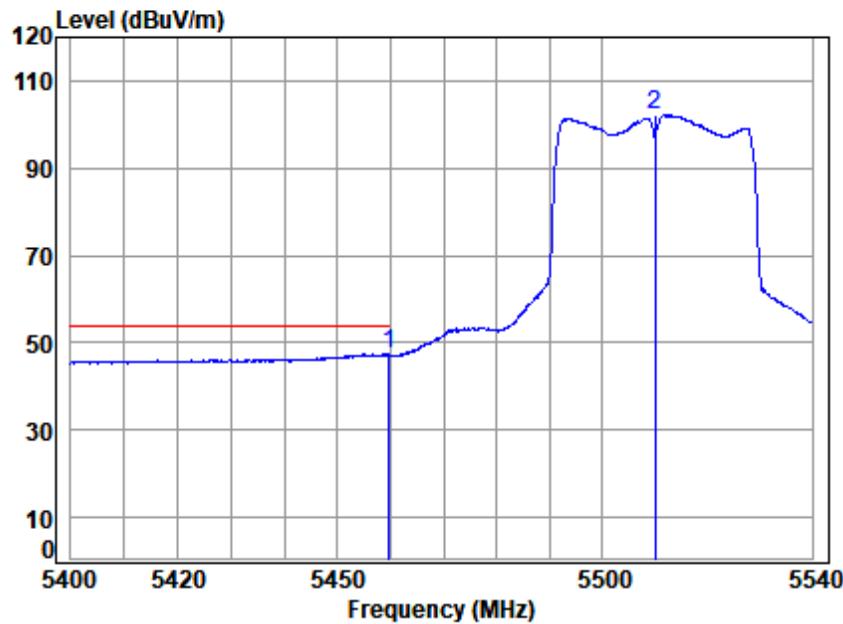
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Test Mode: 06; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low

**Condition: 3m VERTICAL****Job No : 00164TL/00165TL****Mode : 5510 Band edge**
: 5G Wi-Fi 11n40

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 pp	5459.622	10.60	32.90	30.72	34.51	47.29	54.00 -6.71 Average
2	5510.000	10.56	32.90	30.70	89.42	102.18	----- ----- Average

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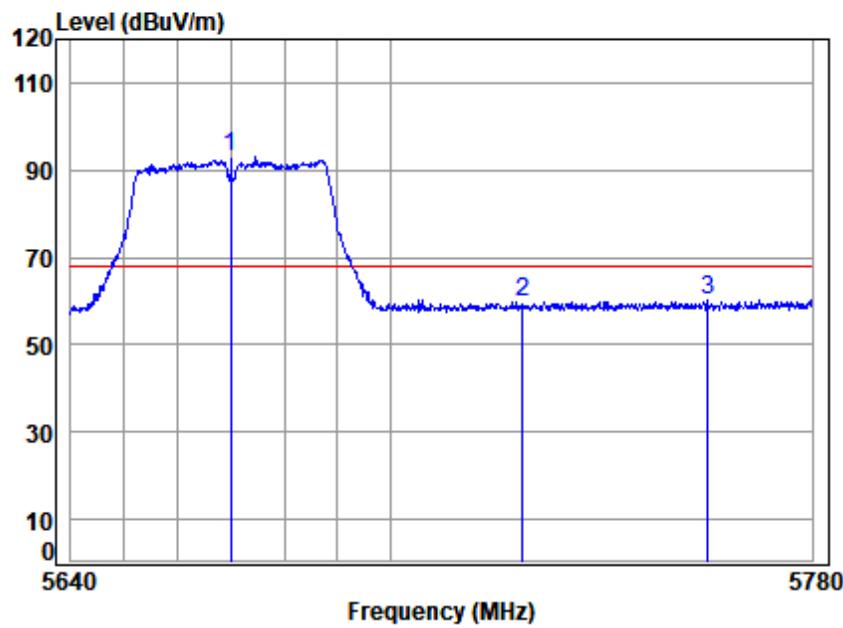
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Test Mode: 06; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High



Condition: 3m HORIZONTAL
Job No : 00164TL/00165TL
Mode : 5670 Band edge
: 5G Wi-Fi 11n40

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1 pp	5670.000	10.52	33.14	30.63	79.92	92.95	68.20 24.75 peak
2	5725.000	10.68	33.25	30.61	46.28	59.60	68.20 -8.60 peak
3	5760.051	10.84	33.32	30.60	46.81	60.37	68.20 -7.83 peak



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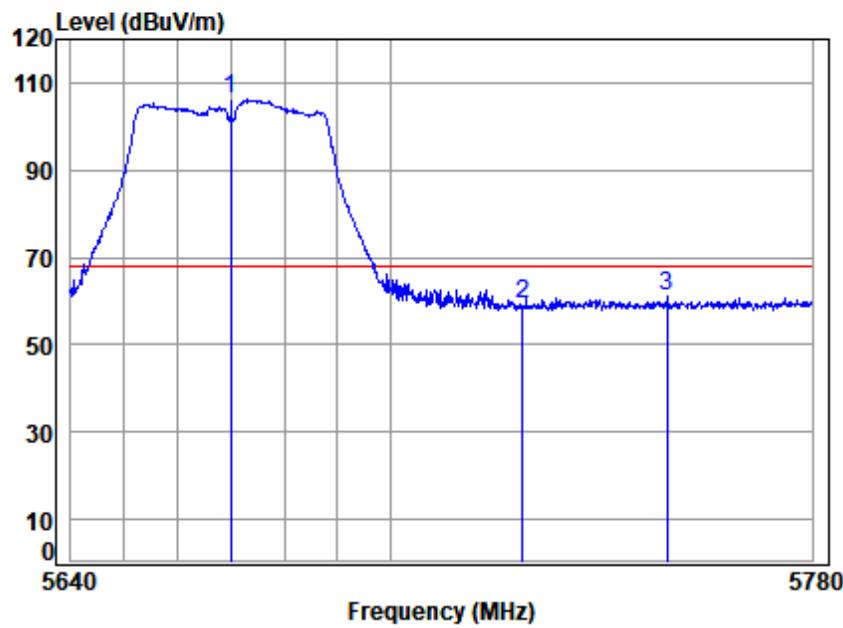
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Test Mode: 06; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:High

**Condition: 3m VERTICAL****Job No : 00164TL/00165TL****Mode : 5670 Band edge
: 5G Wi-Fi 11n40**

Freq	Cable	Ant	Preamp	Read	Limit		Over	Remark	
	Loss	Factor	Factor	Level	Level	Line	Limit		
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	pp	5670.000	10.52	33.14	30.63	93.07	106.10	68.20	37.90 Peak
2		5725.000	10.68	33.25	30.61	45.80	59.12	68.20	-9.08 Peak
3		5752.430	10.80	33.30	30.60	47.49	60.99	68.20	-7.21 Peak

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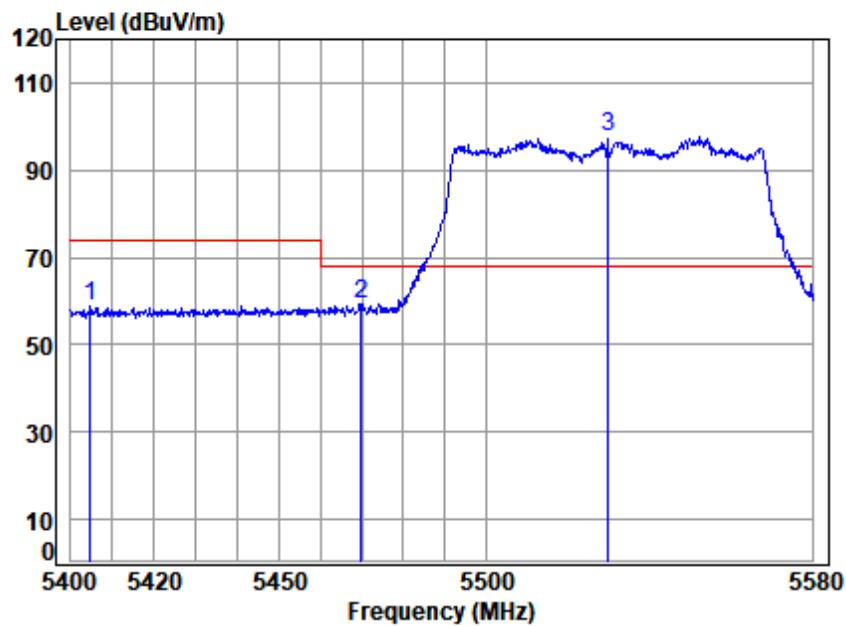


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Test Mode: 06; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:80MHz; Channel:Low



Condition: 3m HORIZONTAL

Job No : 00164TL/00165TL

Mode : 5530 Band edge

: 5G Wi-Fi 11ac80

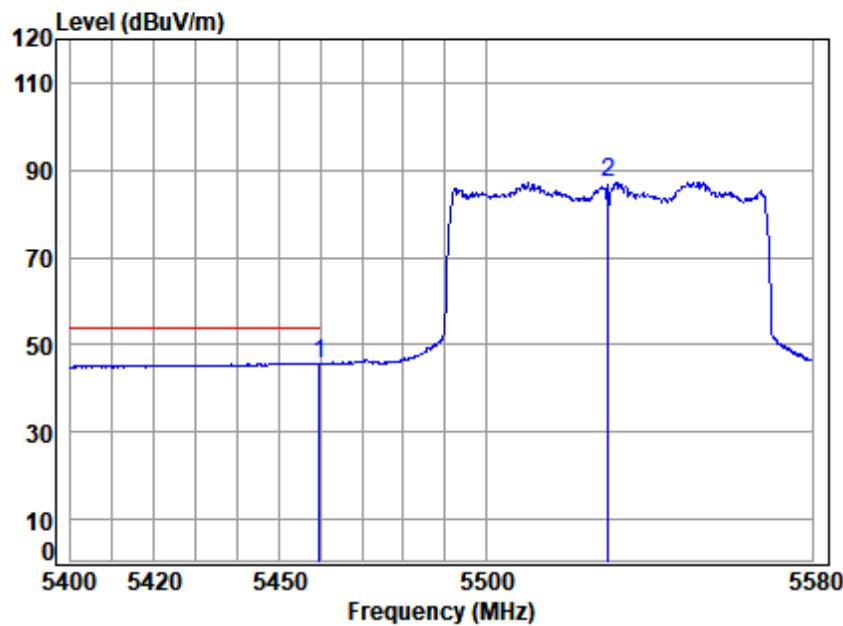
Freq	Cable	Ant	Preamp	Read	Limit		Over	Remark
	Loss	Factor	Factor	Level	Level	Line	Limit	
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	5404.605	10.62	32.81	30.74	46.02	58.71	74.00	-15.29 peak
2	5469.857	10.59	32.90	30.71	46.39	59.17	68.20	-9.03 peak
3 pp	5530.000	10.53	32.90	30.69	84.69	97.43	68.20	29.23 peak

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Test Mode: 06; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:80MHz; Channel:Low



Condition: 3m HORIZONTAL

Job No : 00164TL/00165TL

Mode : 5530 Band edge

: 5G Wi-Fi 11ac80

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level		Limit Line	Over Limit	Remark	
				dB	dB/m	dB	dBuV	dBuV/m	dBuV/m
1 pp	5459.823	10.60	32.90	30.72	33.07	45.85	54.00	-8.15	Average
2	5530.000	10.53	32.90	30.69	74.38	87.12	-----	-----	Average

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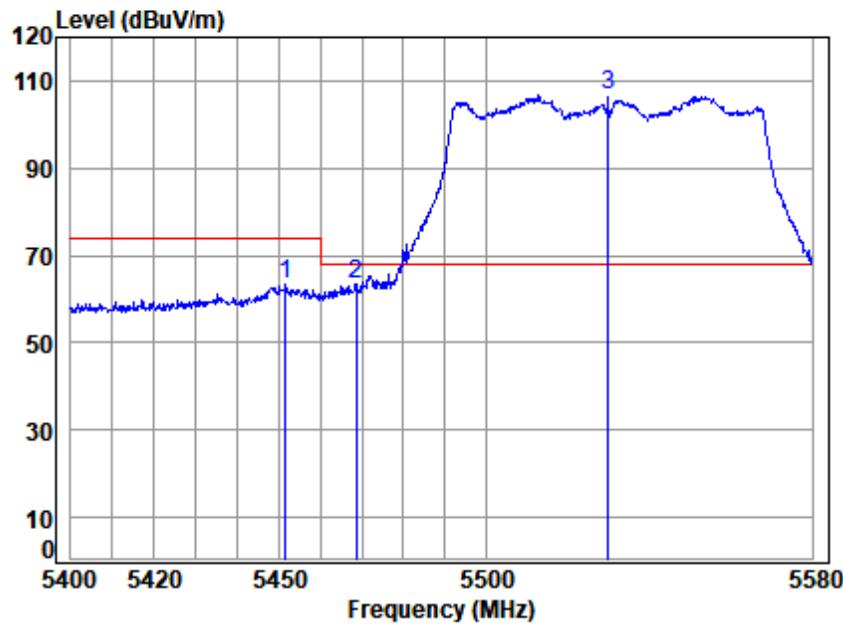
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Test Mode: 06; Polarity: Vertical; Modulation:802.11ac; Bandwidth:80MHz; Channel:Low

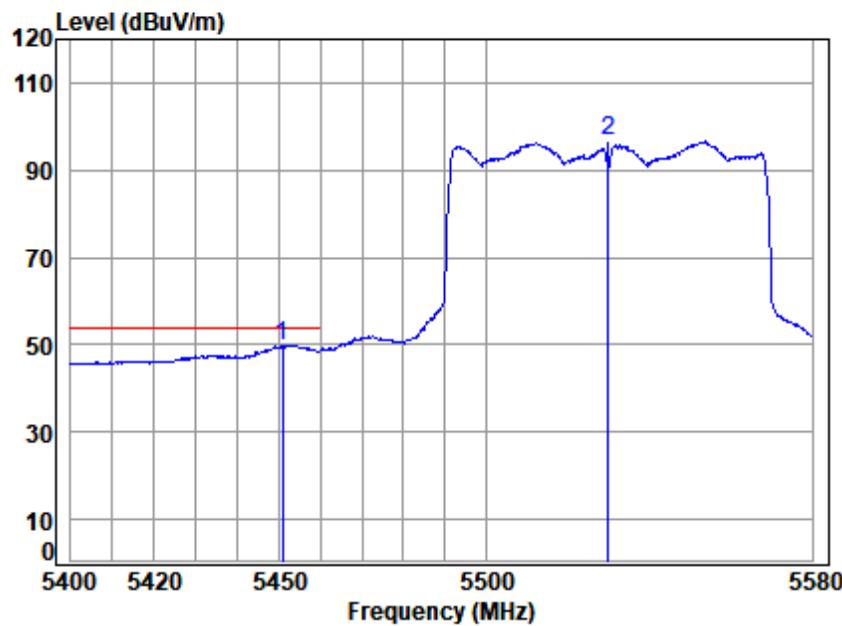
**Condition:** 3m VERTICAL**Job No :** 00164TL/00165TL**Mode :** 5530 Band edge
: 5G Wi-Fi 11ac80

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	5451.594	10.60	32.90	30.72	50.42	63.20	74.00 -10.80 Peak
2	5468.602	10.59	32.90	30.71	50.64	63.42	68.20 -4.78 peak
3 pp	5530.000	10.53	32.90	30.69	93.95	106.69	68.20 38.49 Peak

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**Condition:** 3m VERTICAL**Job No :** 00164TL/00165TL**Mode :** 5530 Band edge**:** 5G Wi-Fi 11ac80

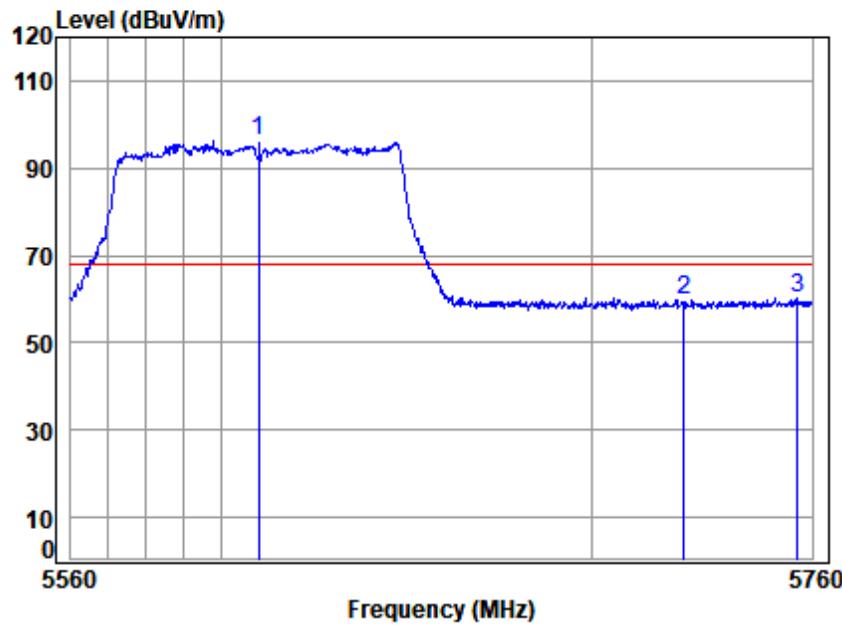
Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level		Limit Line	Over Limit	Remark
				Level	dBuV			
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	5450.879	10.60	32.90	30.72	37.10	49.88	54.00	-4.12 Average
2	5530.000	10.53	32.90	30.69	83.77	96.51	-----	----- Average

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Test Mode: 06; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:80MHz; Channel:High

**Condition:** 3m HORIZONTAL**Job No** : 00164TL/00165TL**Mode** : 5610 Band edge

: 5G Wi-Fi 11ac80

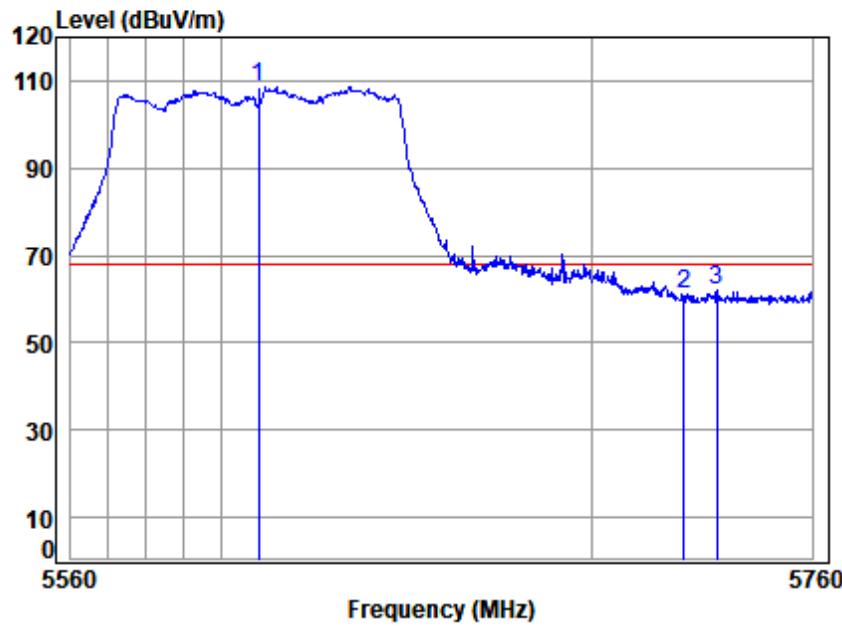
Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark	
	Loss	Factor	Factor	Level				
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	5610.000	10.43	33.02	30.66	83.29	96.08	68.20	27.88 peak
2	5725.000	10.68	33.25	30.61	46.56	59.88	68.20	-8.32 peak
3	5755.930	10.82	33.31	30.60	46.75	60.28	68.20	-7.92 peak



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Test Mode: 06; Polarity: Vertical; Modulation:802.11ac; Bandwidth:80MHz; Channel:High

**Condition: 3m VERTICAL****Job No : 00164TL/00165TL****Mode : 5610 Band edge****: 5G Wi-Fi 11ac80**

Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level		Limit Line	Over Limit	Remark
				Level	dBuV			
1 pp	5610.000	10.43	33.02	30.66	95.74	108.53	68.20	40.33 Peak
2	5725.000	10.68	33.25	30.61	47.71	61.03	68.20	-7.17 peak
3	5733.801	10.72	33.27	30.61	48.46	61.84	68.20	-6.36 Peak

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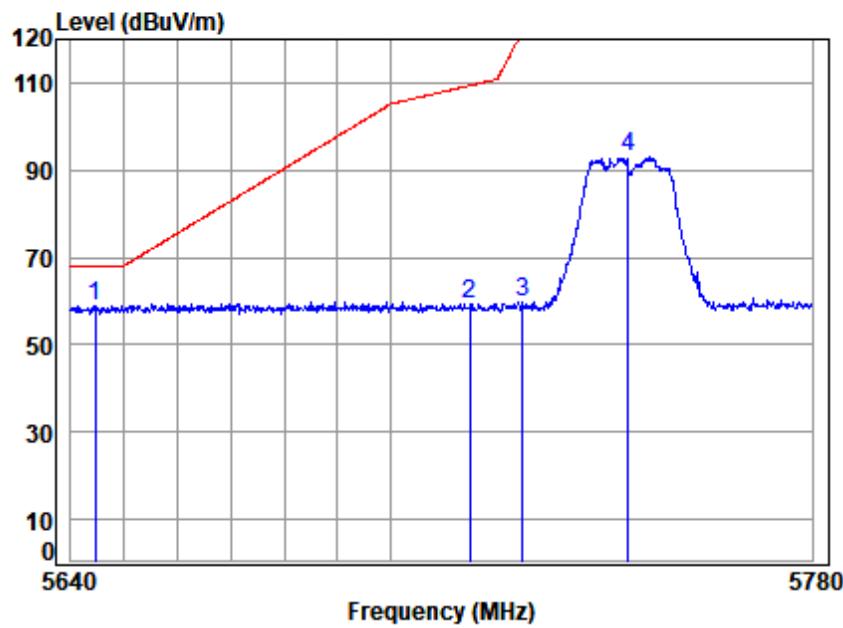
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Test Mode: 07; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Condition: 3m HORIZONTAL

Job No : 00164TL/00165TL

Mode : 5745 Band edge
: 5.8G Wi-Fi 11a

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark	
	MHz	Loss	Factor	Level	Level	Line		
1 pp	5644.565	10.48	33.09	30.64	45.97	58.90	68.20	-9.30 peak
2	5715.000	10.63	33.23	30.61	46.10	59.35	109.40	-50.05 peak
3	5725.000	10.68	33.25	30.61	46.27	59.59	122.20	-62.61 peak
4	5745.000	10.77	33.29	30.60	79.56	93.02	-----	peak

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Shenzhen Branch Inspection & Testing Services Laboratory

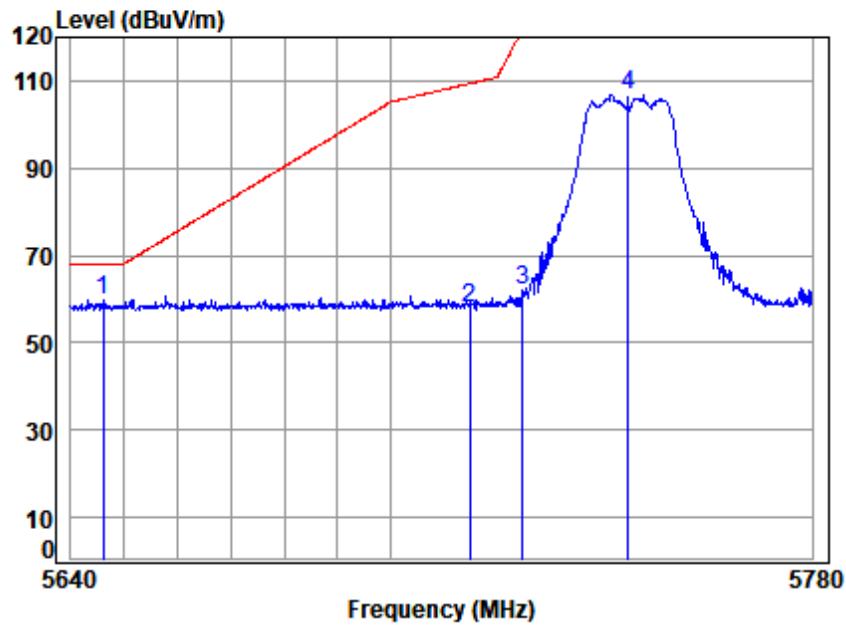
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Test Mode: 07; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:Low



Condition: 3m VERTICAL

Job No : 00164TL/00165TL

Mode : 5745 Band edge
: 5.8G Wi-Fi 11a

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 pp	5646.088	10.48	33.09	30.64	46.71	59.64	68.20 -8.56 peak
2	5715.000	10.63	33.23	30.61	44.84	58.09	109.40 -51.31 peak
3	5725.000	10.68	33.25	30.61	48.71	62.03	122.20 -60.17 peak
4	5745.000	10.77	33.29	30.60	93.44	106.90	----- ----- peak

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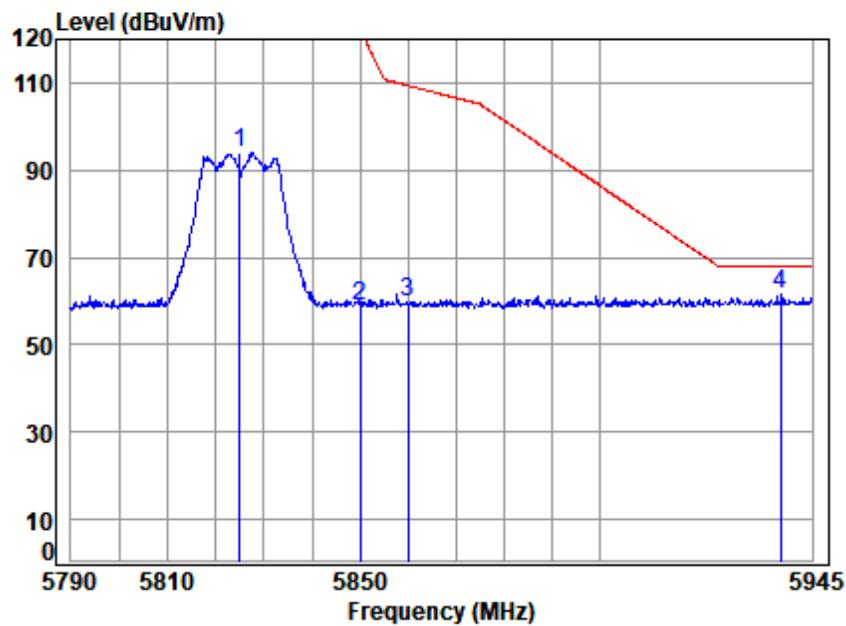
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Test Mode: 07; Polarity: Horizontal; Modulation:802.11a; Bandwidth:20MHz; Channel:High



Condition: 3m HORIZONTAL

Job No : 00164TL/00165TL

Mode : 5825 Band edge
: 5.8G Wi-Fi 11a

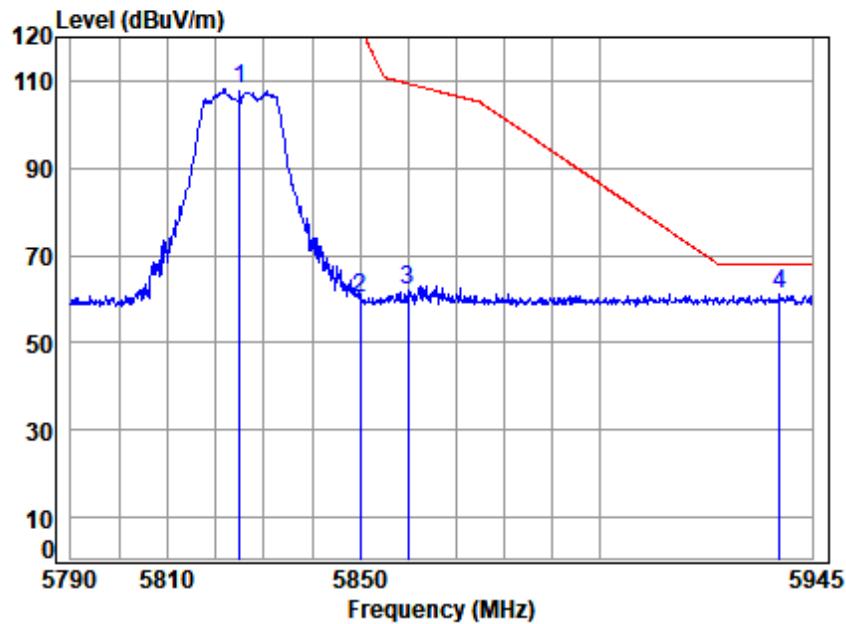
Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	5825.000	10.99	33.50	30.57	80.28	94.20	----- peak
2	5850.000	10.95	33.60	30.56	44.84	58.83	122.20 -63.37 peak
3	5860.000	10.94	33.58	30.56	45.66	59.62	109.40 -49.78 peak
4 pp	5938.407	10.86	33.58	30.52	47.69	61.61	68.20 -6.59 peak

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Test Mode: 07; Polarity: Vertical; Modulation:802.11a; Bandwidth:20MHz; Channel:High

**Condition: 3m VERTICAL****Job No : 00164TL/00165TL**
Mode : 5825 Band edge
: 5.8G Wi-Fi 11a

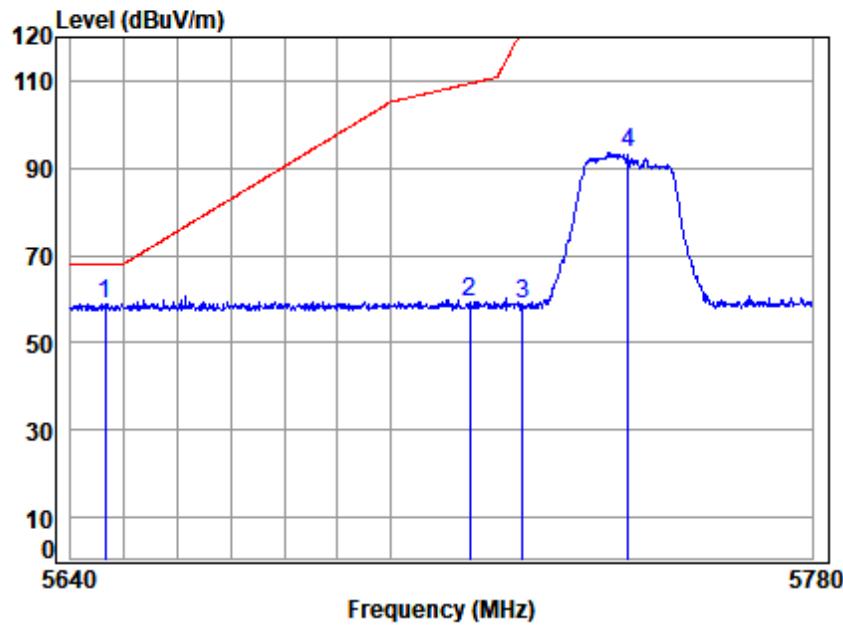
Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	5825.000	10.99	33.50	30.57	94.17	108.09	----- peak
2	5850.000	10.95	33.60	30.56	46.19	60.18	122.20 -62.02 peak
3	5860.000	10.94	33.58	30.56	48.28	62.24	109.40 -47.16 peak
4 pp	5938.094	10.86	33.58	30.52	47.43	61.35	68.20 -6.85 peak

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Test Mode: 07; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



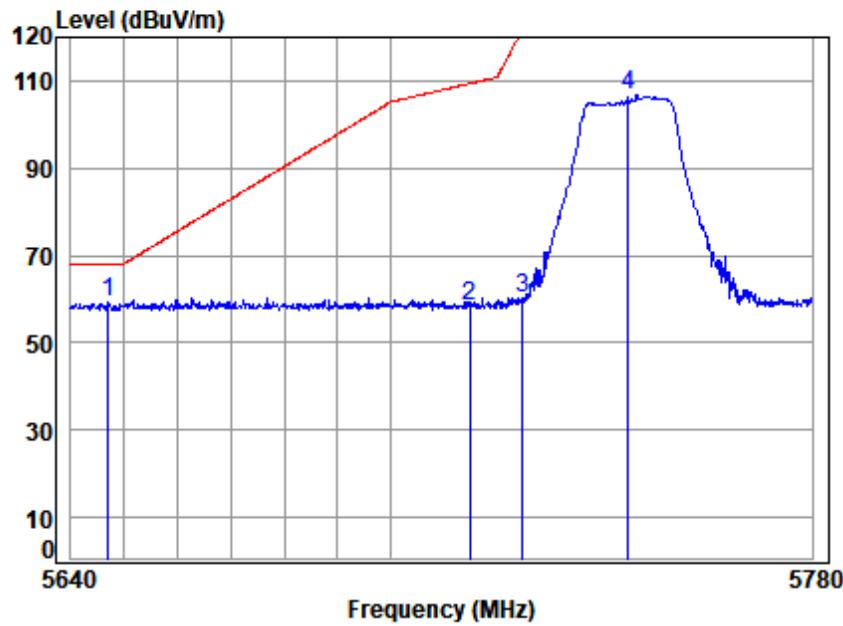
Condition: 3m HORIZONTAL
Job No : 00164TL/00165TL
Mode : 5745 Band edge
: 5.8G Wi-Fi 11n20

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark	
	MHz	Loss	Factor	Level	Level	Line		
1 pp	5646.365	10.48	33.09	30.64	46.09	59.02	68.20	-9.18 peak
2	5715.000	10.63	33.23	30.61	46.01	59.26	109.40	-50.14 peak
3	5725.000	10.68	33.25	30.61	45.60	58.92	122.20	-63.28 peak
4	5745.000	10.77	33.29	30.60	80.23	93.69	-----	peak

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Test Mode: 07; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:Low



Condition: 3m VERTICAL

Job No : 00164TL/00165TL

Mode : 5745 Band edge

: 5.8G Wi-Fi 11n20

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1 pp	5646.919	10.48	33.09	30.64	46.42	59.35	68.20 -8.85 peak
2	5715.000	10.63	33.23	30.61	45.00	58.25	109.40 -51.15 peak
3	5725.000	10.68	33.25	30.61	46.80	60.12	122.20 -62.08 peak
4	5745.000	10.77	33.29	30.60	93.25	106.71	----- peak

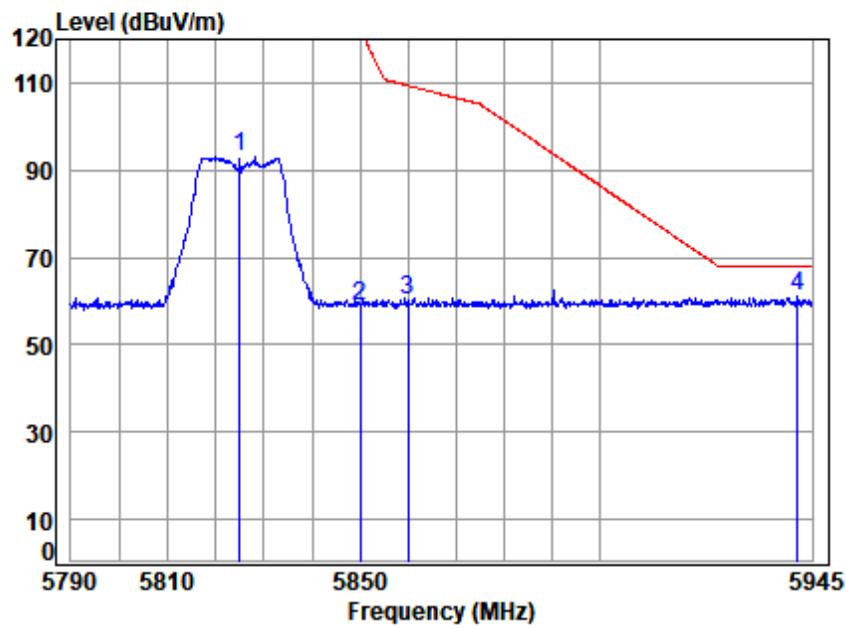
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Test Mode: 07; Polarity: Horizontal; Modulation:802.11n; Bandwidth:20MHz; Channel:High

**Condition:** 3m HORIZONTAL**Job No :** 00164TL/00165TL**Mode :** 5825 Band edge**:** 5.8G Wi-Fi 11n20

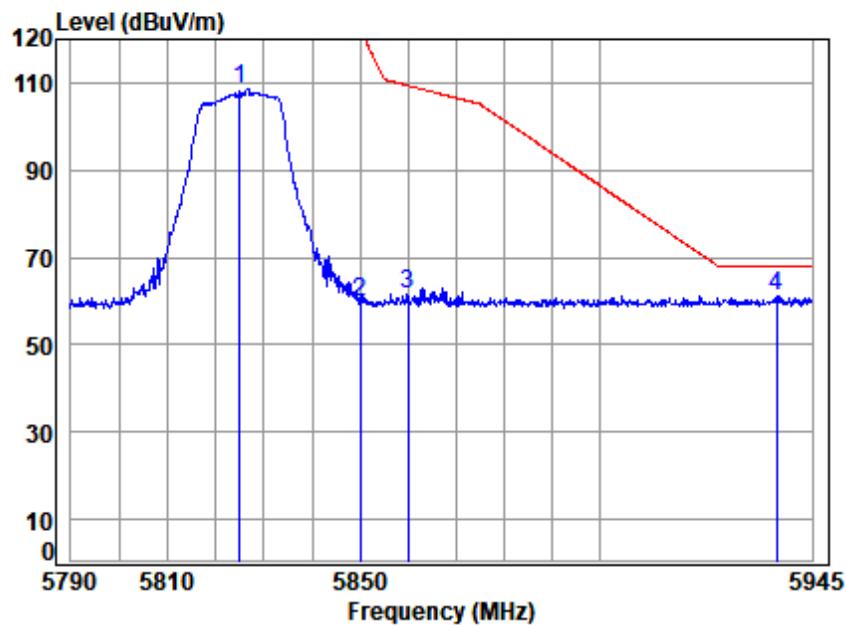
Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	Loss	Factor	Factor	Level			
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 5825.000	10.99	33.50	30.57	79.16	93.08	-----	peak
2 5850.000	10.95	33.60	30.56	44.90	58.89	122.20	-63.31 peak
3 5860.000	10.94	33.58	30.56	46.16	60.12	109.40	-49.28 peak
4 pp 5941.860	10.86	33.58	30.52	47.08	61.00	68.20	-7.20 peak

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Test Mode: 07; Polarity: Vertical; Modulation:802.11n; Bandwidth:20MHz; Channel:High

**Condition:** 3m VERTICAL**Job No** : 00164TL/00165TL**Mode** : 5825 Band edge

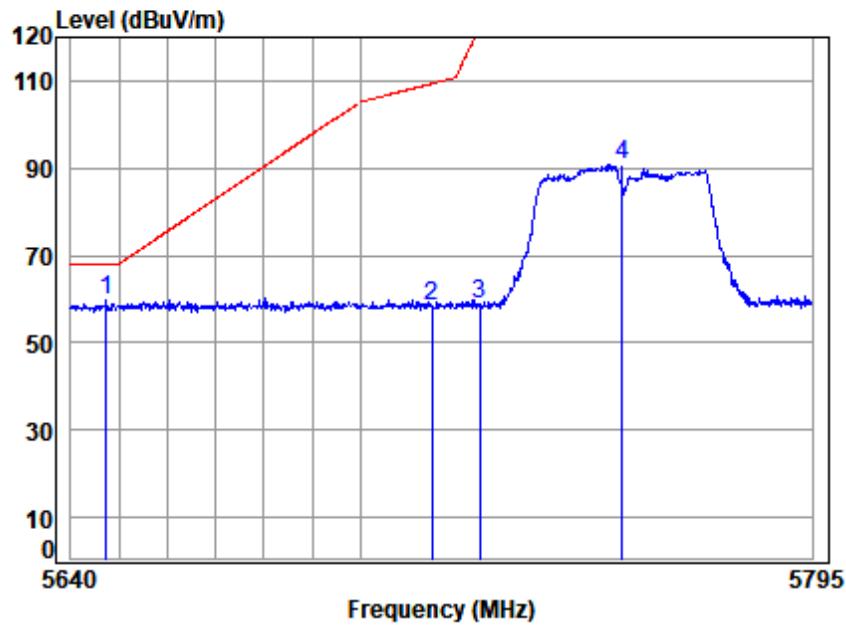
: 5.8G Wi-Fi 11n20

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	5825.000	10.99	33.50	30.57	94.66	108.58	----- peak
2	5850.000	10.95	33.60	30.56	45.96	59.95	122.20 -62.25 peak
3	5860.000	10.94	33.58	30.56	47.67	61.63	109.40 -47.77 peak
4 pp	5937.466	10.86	33.57	30.53	47.15	61.05	68.20 -7.15 peak

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Test Mode: 07; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:Low



Condition: 3m HORIZONTAL
Job No : 00164TL/00165TL
Mode : 5755 Band edge
: 5.8G Wi-Fi 11n40

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark	
	MHz	Loss	Factor	Level	Level	Line		
1 pp	5647.344	10.48	33.09	30.64	46.79	59.72	68.20	-8.48 peak
2	5715.000	10.63	33.23	30.61	45.02	58.27	109.40	-51.13 peak
3	5725.000	10.68	33.25	30.61	45.33	58.65	122.20	-63.55 peak
4	5755.000	10.81	33.31	30.60	77.15	90.67	-----	peak

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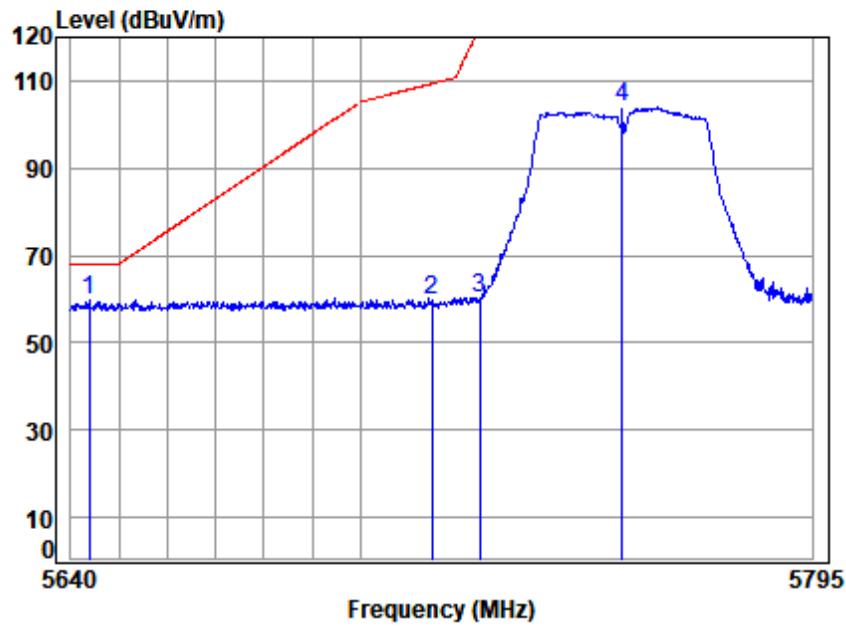
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Test Mode: 07; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:Low

**Condition: 3m VERTICAL****Job No : 00164TL/00165TL****Mode : 5755 Band edge****: 5.8G Wi-Fi 11n40**

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark	
	MHz	Loss	Factor	Level	Level	Line		
1 pp	5643.824	10.48	33.09	30.64	46.70	59.63	68.20	-8.57 peak
2	5715.000	10.63	33.23	30.61	46.36	59.61	109.40	-49.79 peak
3	5725.000	10.68	33.25	30.61	46.93	60.25	122.20	-61.95 peak
4	5755.000	10.81	33.31	30.60	90.49	104.01	-----	peak

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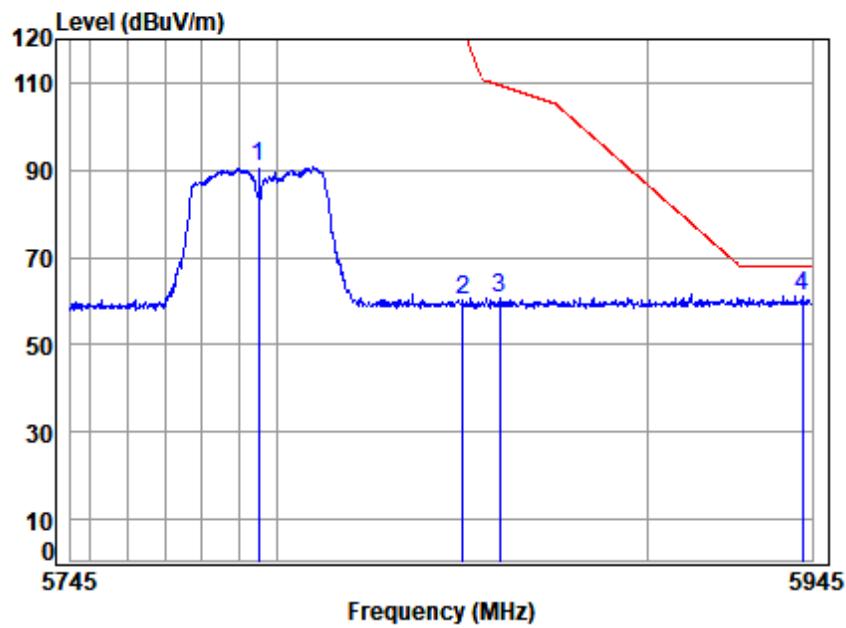
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Test Mode: 07; Polarity: Horizontal; Modulation:802.11n; Bandwidth:40MHz; Channel:High



Condition: 3m HORIZONTAL
Job No : 00164TL/00165TL
Mode : 5795 Band edge
: 5.8G Wi-Fi 11n40

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	5795.000	11.00	33.39	30.58	76.79	90.60	----- peak
2	5850.000	10.95	33.60	30.56	46.07	60.06	122.20 -62.14 peak
3	5860.000	10.94	33.58	30.56	46.77	60.73	109.40 -48.67 peak
4 pp	5942.356	10.86	33.58	30.52	47.21	61.13	68.20 -7.07 peak

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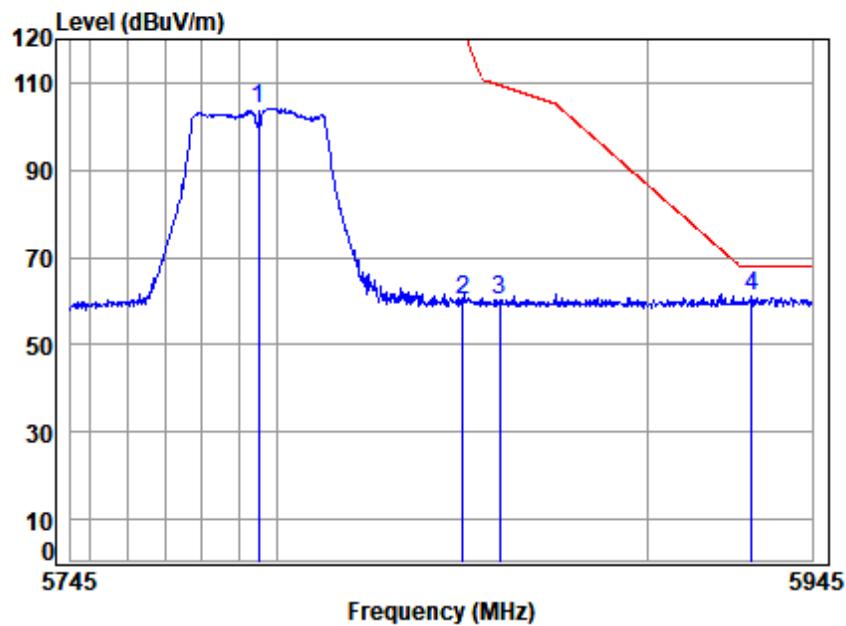
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Test Mode: 07; Polarity: Vertical; Modulation:802.11n; Bandwidth:40MHz; Channel:High

**Condition:** 3m VERTICAL**Job No :** 00164TL/00165TL**Mode :** 5795 Band edge**:** 5.8G Wi-Fi 11n40

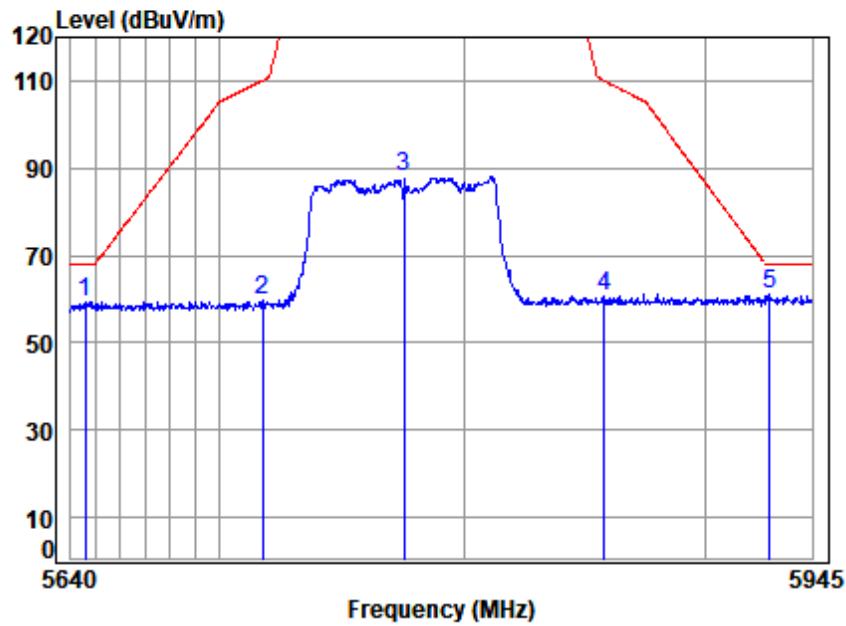
Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Factor	Level	Level	
1	5795.000	11.00	33.39	30.58	90.36	104.17	----- peak
2	5850.000	10.95	33.60	30.56	46.15	60.14	122.20 -62.06 peak
3	5860.000	10.94	33.58	30.56	46.32	60.28	109.40 -49.12 peak
4 pp	5928.544	10.87	33.56	30.53	47.38	61.28	68.20 -6.92 peak

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Test Mode: 07; Polarity: Horizontal; Modulation:802.11ac; Bandwidth:80MHz; Channel:middle



Condition: 3m HORIZONTAL
Job No : 00164TL/00165TL
Mode : 5775 Band edge
: 5.8G Wi-Fi 11ac80

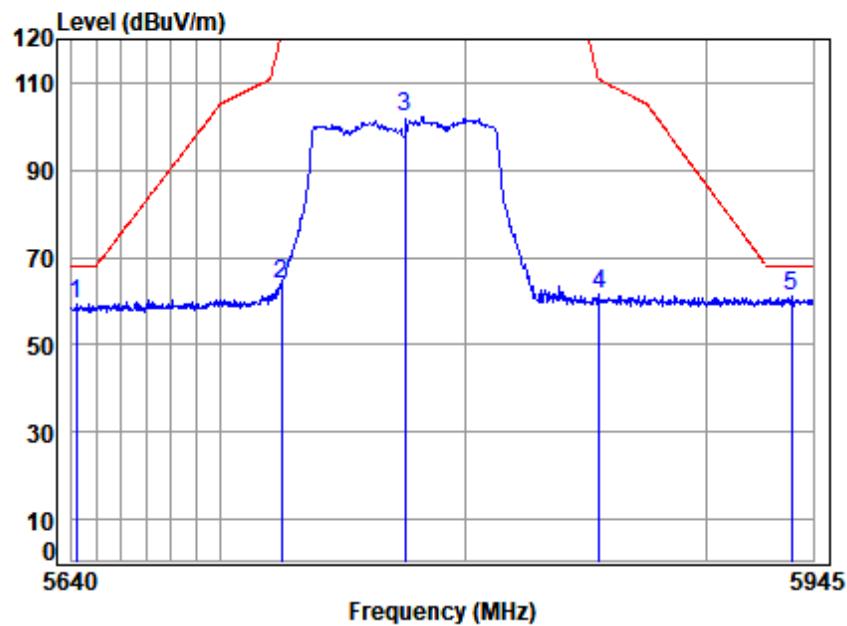
Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	MHz	Loss	Factor	Level	Level	Line	
1	5645.646	10.48	33.09	30.64	46.47	59.40	68.20 -8.80 Peak
2	5717.460	10.64	33.23	30.61	46.60	59.86	110.09 -50.23 peak
3	5775.000	10.91	33.35	30.59	74.32	87.99	----- peak
4	5857.975	10.94	33.58	30.56	46.81	60.77	109.97 -49.20 peak
5 pp	5927.180	10.87	33.55	30.53	47.11	61.00	68.20 -7.20 peak

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Test Mode: 07; Polarity: Vertical; Modulation:802.11ac; Bandwidth:80MHz; Channel:middle

**Condition: 3m VERTICAL****Job No : 00164TL/00165TL****Mode : 5775 Band edge
: 5.8G Wi-Fi 11ac80**

	Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
		Loss	Factor	Factor	Level	Level	Line	
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	5641.783	10.47	33.08	30.64	46.50	59.41	68.20	-8.79 Peak
2	5724.691	10.67	33.25	30.61	50.75	64.06	121.50	-57.44 peak
3	5775.000	10.91	33.35	30.59	88.52	102.19	-----	----- peak
4	5855.507	10.95	33.59	30.56	47.68	61.66	110.66	-49.00 peak
5 pp	5935.927	10.86	33.57	30.53	47.06	60.96	68.20	-7.24 peak

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7.6 Channel Move Time

Test Requirement KDB 905462 D02 Section 5.1

Test Method: KDB 905462 D02 Section 7.8.3

Limit:

Test item	Limit	Applicability	
		Master Device or client with Radar Detection	Client without Radar Detection
Non-occupancy period	Minimum 30 minutes	Yes	Not required
Channel Availability Check Time	60 seconds	Yes	Not required
Channel Move Time	10 seconds See Note 1.	Yes	Yes
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.	Yes	Yes
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.	Yes	Not required
<p>Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.</p> <p>Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.</p> <p>Note 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.</p>			

7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 23.0 °C

Humidity: 41.3 % RH

Atmospheric Pressure: 1020 mbar

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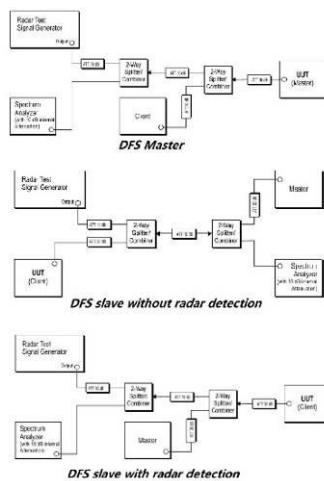
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7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	08	Normal operating_Keep the EUT communication with the companion device.

7.6.3 Test Setup Diagram



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7.6.4 Measurement Procedure and Data

- 1) The radar pulse generator is setup to provide a pulse at frequency that the master and client are operating. A type 0 radar pulse with a 1us pulse width and a 1428us PRI is used for the testing.
- 2) The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -61dBm at the antenna port of the master device.
- 3) A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.
- 4) EUT will associate with the master at channel. The file "iperf.exe" specified by the FCC is streamed from the PC 2 through the master and the client device to the PC 1 and played in full motion video using Media Player Classic Ver. 6.4.8.6 in order to properly load the network for the entire period of the test.
- 5) When radar burst with a level equal to the DFS Detection Threshold +1dB is generated on the operating channel of the U-NII device. At time T0 the radar waveform generator sends a burst of pulse of the radar waveform at Detection Threshold +1dB.
- 6) Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel. Measure and record the transmissions from the UUT during the observation time (Channel Move Time). One 15 seconds plot is reported for the Short Pulse Radar Type 0. The plot for the Short Pulse Radar Types start at the end of the radar burst. The Channel Move Time will be calculated based on the zoom in 600ms plot of the Short Pulse Radar Type.
- 7) Measurement of the aggregate duration of the Channel Closed Transmission Time method. With the spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: Dwell (0.3ms) = S (12000ms) / B (4000); where Dwell is the dwell time per spectrum analyzer sampling bin, S is sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of Channel Closing Transmission Time is calculated by: C (ms) = N X Dwell (0.3ms); where C is the Closing Time, N is the number of spectrum analyzer sampling bins (intermittent control signals) showing a U-NII transmission and Dwell is the dwell time per bin.
- 8) Measurement the EUT for more than 30 minutes following the channel move time to verify that no transmission or beacons occur on this channel.

Please Refer to Appendix for Details



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7.7 Duty Cycle

Test Requirement ANSI C63.10 (2013) Section 12.2

Test Method: ANSI C63.10 (2013) Section 12.2

7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 22.6 °C Humidity: 43.1 % RH Atmospheric Pressure: 1020 mbar

7.7.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	04	TX mode (U-NII-1) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	05	TX mode (U-NII-2A) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	06	TX mode (U-NII-2C) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	07	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.

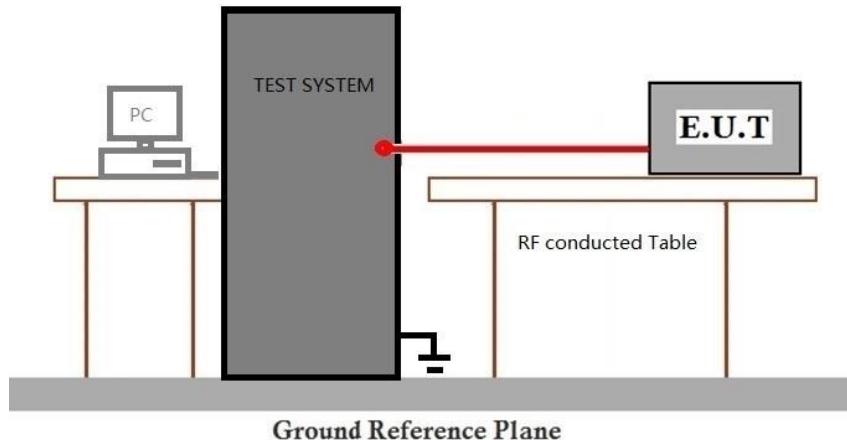
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7.7.3 Test Setup Diagram**7.7.4 Measurement Procedure and Data**

Please Refer to Appendix for Details



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7.8 99% Bandwidth

Test Requirement ANSI C63.10 (2013) Section 12.4.2

Test Method: ANSI C63.10 (2013) Section 12.4.2

7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 22.6 °C Humidity: 43.1 % RH Atmospheric Pressure: 1020 mbar

7.8.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	04	TX mode (U-NII-1) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	05	TX mode (U-NII-2A) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	06	TX mode (U-NII-2C) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	07	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.

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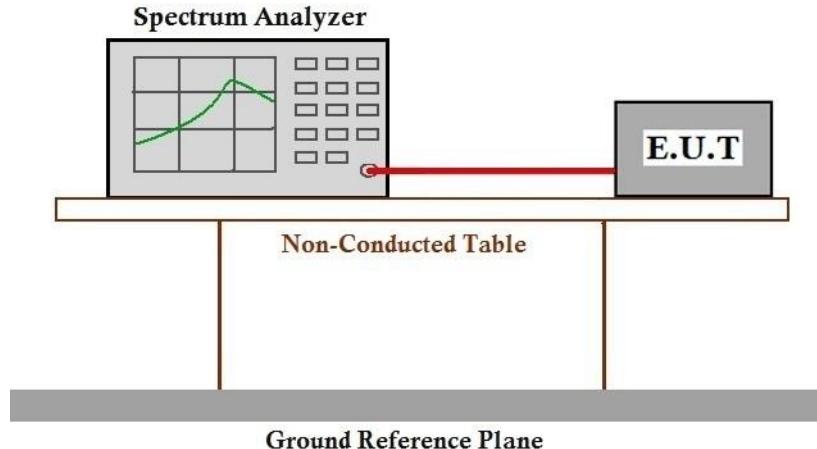
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7.8.3 Test Setup Diagram



7.8.4 Measurement Procedure and Data

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7.9 26dB Emission bandwidth

Test Requirement 47 CFR Part 15, Subpart E 15.407 (a)

Test Method: ANSI C63.10 (2013) Section 12.4.1

7.9.1 E.U.T. Operation

Operating Environment:

Temperature: 22.6 °C Humidity: 43.1 % RH Atmospheric Pressure: 1020 mbar

7.9.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	04	TX mode (U-NII-1)_Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	05	TX mode (U-NII-2A) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	06	TX mode (U-NII-2C) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.

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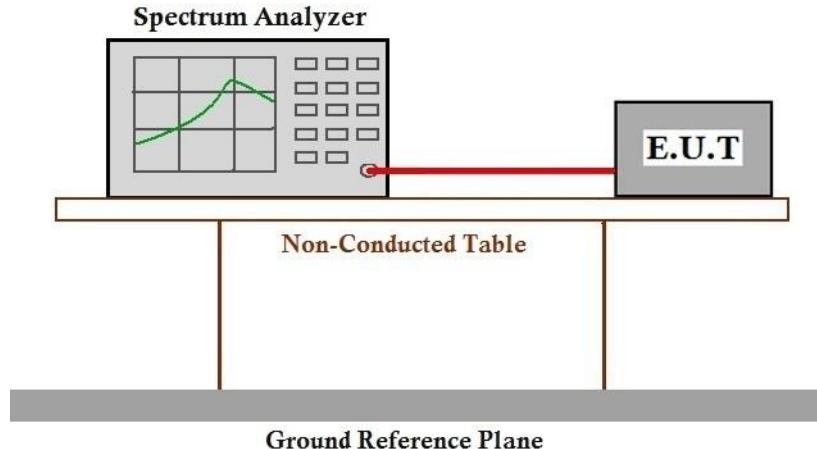
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7.9.3 Test Setup Diagram



7.9.4 Measurement Procedure and Data

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7.10 Minimum 6 dB bandwidth (5.725-5.85 GHz band)

Test Requirement 47 CFR Part 15, Subpart E 15.407 (e)

Test Method: ANSI C63.10 (2013) Section 6.9.2

Limit:

Frequency band(MHz)	Limit
5725-5850	≥500 kHz

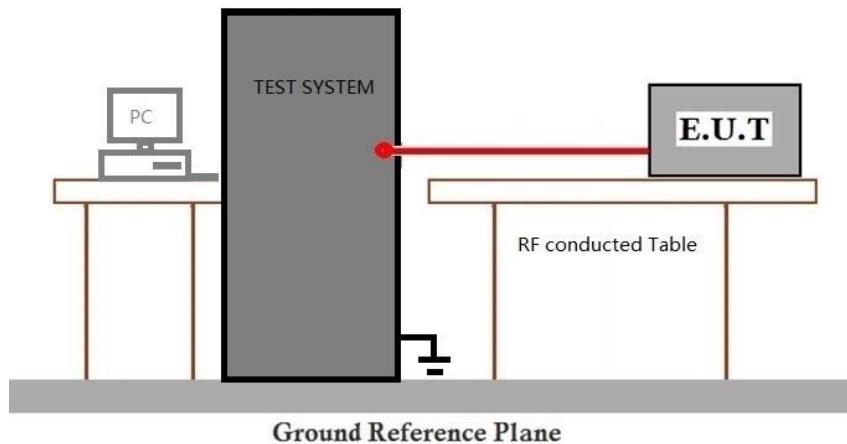
7.10.1 E.U.T. Operation

Operating Environment:

Temperature: 22.6 °C Humidity: 43.1 % RH Atmospheric Pressure: 1020 mbar

7.10.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	07	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.

7.10.3 Test Setup Diagram**7.10.4 Measurement Procedure and Data**

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7.11 Peak Power spectrum density

Test Requirement 47 CFR Part 15, Subpart E 15.407 (a)

Test Method: ANSI C63.10 (2013) Section 12.5

Limit:

Frequency band(MHz)	Limit
5150-5250	≤17dBm in 1MHz for master device
	≤11dBm in 1MHz for client device
5250-5350	≤11dBm in 1MHz for client device
5470-5725	≤11dBm in 1MHz for client device
5725-5850	≤30dBm in 500 kHz
Remark:	The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test.

7.11.1 E.U.T. Operation

Operating Environment:

Temperature: 22.6 °C Humidity: 43.1 % RH Atmospheric Pressure: 1020 mbar

7.11.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	04	TX mode (U-NII-1) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	05	TX mode (U-NII-2A) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	06	TX mode (U-NII-2C) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	07	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.

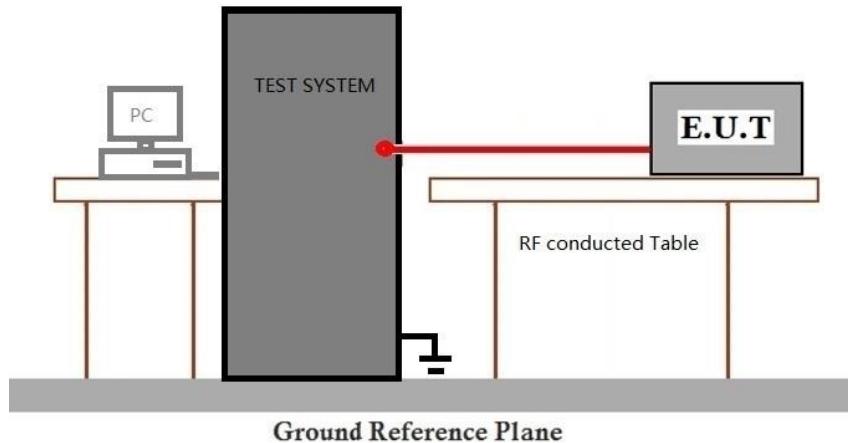
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7.11.3 Test Setup Diagram**7.11.4 Measurement Procedure and Data**

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7.12 Frequency Stability

Test Requirement 47 CFR Part 15, Subpart E 15.407 (g)

Test Method: ANSI C63.10 (2013) Section 6.8

7.12.1 E.U.T. Operation

Operating Environment:

Temperature: 22.6 °C Humidity: 43.1 % RH Atmospheric Pressure: 1020 mbar

7.12.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	04	TX mode (U-NII-1) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	05	TX mode (U-NII-2A) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	06	TX mode (U-NII-2C) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.
Final test	07	TX mode (U-NII-3) _Keep the EUT in continuously transmitting mode with all modulation types. All data rates for each modulation type have been tested and found the data rate @ 6Mbps is the worst case of IEEE 802.11a; data rate @ MCS0 is the worst case of IEEE 802.11n/ac 20/40/80, Only the data of worst case is recorded in the report.

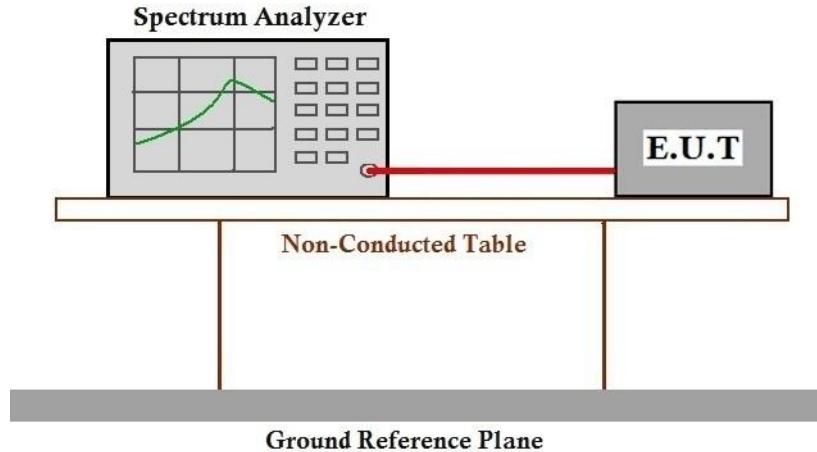
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7.12.3 Test Setup Diagram**7.12.4 Measurement Procedure and Data**

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7.13 Non-occupancy period

Test Requirement KDB 905462 D02 Section 5.1

Test Method: KDB 905462 D02 Section 7.8.3

Limit:

Test item	Limit	Applicability	
		Master Device or client with Radar Detection	Client without Radar Detection
Non-occupancy period	Minimum 30 minutes	Yes	Not required
Channel Availability Check Time	60 seconds	Yes	Not required
Channel Move Time	10 seconds See Note 1.	Yes	Yes
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.	Yes	Yes
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.	Yes	Not required
<p>Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.</p> <p>Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.</p> <p>Note 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.</p>			

7.13.1 E.U.T. Operation

Operating Environment:

Temperature: 23.0 °C

Humidity: 41.3 % RH

Atmospheric Pressure: 1020 mbar

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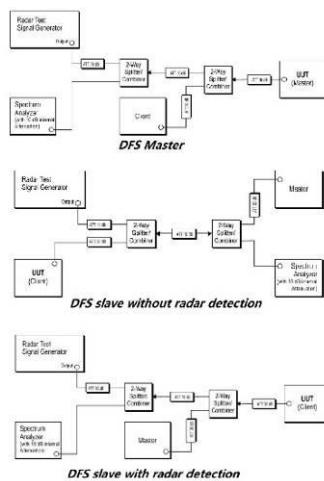
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7.13.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	08	Normal operating_Keep the EUT communication with the companion device.

7.13.3 Test Setup Diagram

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7.13.4 Measurement Procedure and Data

- 1) The radar pulse generator is setup to provide a pulse at frequency that the master and client are operating. A type 0 radar pulse with a 1us pulse width and a 1428us PRI is used for the testing.
- 2) The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -61dBm at the antenna port of the master device.
- 3) A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.
- 4) EUT will associate with the master at channel. The file "iperf.exe" specified by the FCC is streamed from the PC 2 through the master and the client device to the PC 1 and played in full motion video using Media Player Classic Ver. 6.4.8.6 in order to properly load the network for the entire period of the test.
- 5) When radar burst with a level equal to the DFS Detection Threshold +1dB is generated on the operating channel of the U-NII device. At time T0 the radar waveform generator sends a burst of pulse of the radar waveform at Detection Threshold +1dB.
- 6) Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel. Measure and record the transmissions from the UUT during the observation time (Channel Move Time). One 15 seconds plot is reported for the Short Pulse Radar Type 0. The plot for the Short Pulse Radar Types start at the end of the radar burst. The Channel Move Time will be calculated based on the zoom in 600ms plot of the Short Pulse Radar Type.
- 7) Measurement of the aggregate duration of the Channel Closed Transmission Time method. With the spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: Dwell (0.3ms) = S (12000ms) / B (4000); where Dwell is the dwell time per spectrum analyzer sampling bin, S is sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of Channel Closing Transmission Time is calculated by: C (ms) = N X Dwell (0.3ms); where C is the Closing Time, N is the number of spectrum analyzer sampling bins (intermittent control signals) showing a U-NII transmission and Dwell is the dwell time per bin.
- 8) Measurement the EUT for more than 30 minutes following the channel move time to verify that no transmission or beacons occur on this channel.

Please Refer to Appendix for Details



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7.14 Channel Availability Check Time

Test Requirement KDB 905462 D02 Section 5.1

Test Method: KDB 905462 D02 Section 7.8.2

Limit:

Test item	Limit	Applicability	
		Master Device or client with Radar Detection	Client without Radar Detection
Non-occupancy period	Minimum 30 minutes	Yes	Not required
Channel Availability Check Time	60 seconds	Yes	Not required
Channel Move Time	10 seconds See Note 1.	Yes	Yes
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.	Yes	Yes
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.	Yes	Not required
<p>Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.</p> <p>Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.</p> <p>Note 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.</p>			

7.14.1 E.U.T. Operation

Operating Environment:

Temperature: 23.0 °C

Humidity: 41.3 % RH

Atmospheric Pressure: 1020 mbar



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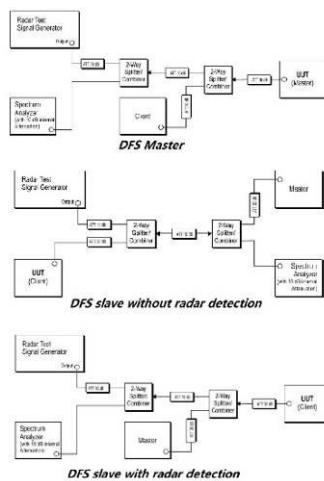
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7.14.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	08	Normal operating_Keep the EUT communication with the companion device.

7.14.3 Test Setup Diagram**7.14.4 Measurement Procedure and Data**

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1) Initial Channel Availability Check Time

The Initial Channel Availability Check Time tests that the UUT does not emit beacon, control, or data signals on the test Channel until the power-up sequence has been completed and the U-NII device checks for Radar Waveforms for one minute on the test Channel. This test does not use any Radar Waveforms and only needs to be performed one time.

- a) The U-NII devices will be powered on and be instructed to operate on the appropriate U-NII Channel that must incorporate DFS functions. At the same time the UUT is powered on, the spectrum analyzer will be set to zero span mode with a 3 MHz RBW and 3 MHz VBW on the Channel occupied by the radar (Chr) with a 2.5 minute sweep time. The spectrum analyzer's sweep will be started at the same time power is applied to the U-NII device.
- b) The UUT should not transmit any beacon or data transmissions until at least 1 minute after the completion of the power-on cycle.
- c) Confirm that the UUT initiates transmission on the channel

This measurement can be used to determine the length of the power-on cycle if it is not supplied by the manufacturer. If the spectrum analyzer sweep is started at the same time the UUT is powered on and the UUT does not begin transmissions until it has completed the cycle, the power-on time can be determined by comparing the two times.

2) Radar Burst at the Beginning of the Channel Availability Check Time

The steps below define the procedure to verify successful radar detection on the test Channel during a period equal to the Channel Availability Check Time and avoidance of operation on that Channel when a radar Burst with a level equal to the DFS Detection Threshold + 1 dB occurs at the beginning of the Channel Availability Check Time.

- a) The Radar Waveform generator and UUT are connected using the applicable test setup described in the sections on configuration for Conducted Tests or Radiated Tests and the power of the UUT is switched off.
- b) The UUT is powered on at T0. T1 denotes the instant when the UUT has completed its power-up sequence (Tpower_up). The Channel Availability Check Time commences on Chr at instant T1 and will end no sooner than T1 + Tch_avail_check.
- c) A single Burst of one of the Short Pulse Radar Types 0-4 will commence within a 6 second window starting at T1. An additional 1 dB is added to the radar test signal to ensure it is at or above the DFS Detection Threshold, accounting for equipment variations/errors.
- d) Visual indication or measured results on the UUT of successful detection of the radar Burst will be recorded and reported. Observation of Chr for UUT emissions will continue for 2.5 minutes after the radar Burst has been generated.
- e) Verify that during the 2.5 minute measurement window no UUT transmissions occurred on Chr. The Channel Availability Check results will be recorded.

3) Radar Burst at the End of the Channel Availability Check Time

The steps below define the procedure to verify successful radar detection on the test Channel during a period equal to the Channel Availability Check Time and avoidance of operation on that Channel when a radar Burst with a level equal to the DFS Detection Threshold + 1dB occurs at the end of the Channel Availability Check Time.



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- a) The Radar Waveform generator and UUT are connected using the applicable test setup described in the sections for Conducted Tests (7.2) or Radiated Tests (7.3) and the power of the UUT is switched off.
- b) The UUT is powered on at T0. T1 denotes the instant when the UUT has completed its power-up sequence (Tpower_up). The Channel Availability Check Time commences on Chr at instant T1 and will end no sooner than T1 + Tch_avail_check.
- c) A single Burst of one of the Short Pulse Radar Types 0-4 will commence within a 6 second window starting at T1 + 54 seconds. An additional 1 dB is added to the radar test signal to ensure it is at or above the DFS Detection Threshold, accounting for equipment variations/errors.
- d) Visual indication or measured results on the UUT of successful detection of the radar Burst will be recorded and reported. Observation of Chr for UUT emissions will continue for 2.5 minutes after the radar Burst has been generated.
- e) Verify that during the 2.5 minute measurement window no UUT transmissions occurred on Chr. The Channel Availability Check results will be recorded.

Please Refer to Appendix for Details



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7.15 Channel Closing Transmission Time

Test Requirement KDB 905462 D02 Section 5.1

Test Method: KDB 905462 D02 Section 7.8.3

Limit:

Test item	Limit	Applicability	
		Master Device or client with Radar Detection	Client without Radar Detection
Non-occupancy period	Minimum 30 minutes	Yes	Not required
Channel Availability Check Time	60 seconds	Yes	Not required
Channel Move Time	10 seconds See Note 1.	Yes	Yes
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.	Yes	Yes
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.	Yes	Not required
<p>Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.</p> <p>Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.</p> <p>Note 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.</p>			

7.15.1 E.U.T. Operation

Operating Environment:

Temperature: 23.0 °C

Humidity: 41.3 % RH

Atmospheric Pressure: 1020 mbar

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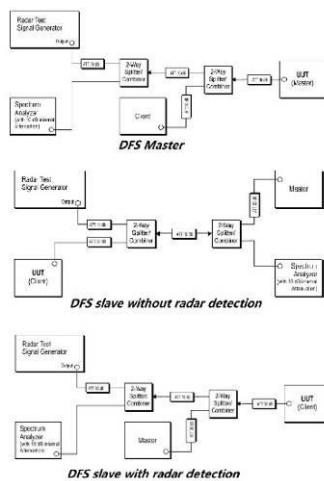
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7.15.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	08	Normal operating_Keep the EUT communication with the companion device.

7.15.3 Test Setup Diagram


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7.15.4 Measurement Procedure and Data

- 1) The radar pulse generator is setup to provide a pulse at frequency that the master and client are operating. A type 0 radar pulse with a 1us pulse width and a 1428us PRI is used for the testing.
- 2) The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -61dBm at the antenna port of the master device.
- 3) A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.
- 4) EUT will associate with the master at channel. The file "iperf.exe" specified by the FCC is streamed from the PC 2 through the master and the client device to the PC 1 and played in full motion video using Media Player Classic Ver. 6.4.8.6 in order to properly load the network for the entire period of the test.
- 5) When radar burst with a level equal to the DFS Detection Threshold +1dB is generated on the operating channel of the U-NII device. At time T0 the radar waveform generator sends a burst of pulse of the radar waveform at Detection Threshold +1dB.
- 6) Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel. Measure and record the transmissions from the UUT during the observation time (Channel Move Time). One 15 seconds plot is reported for the Short Pulse Radar Type 0. The plot for the Short Pulse Radar Types start at the end of the radar burst. The Channel Move Time will be calculated based on the zoom in 600ms plot of the Short Pulse Radar Type.
- 7) Measurement of the aggregate duration of the Channel Closed Transmission Time method. With the spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: Dwell (0.3ms) = S (12000ms) / B (4000); where Dwell is the dwell time per spectrum analyzer sampling bin, S is sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of Channel Closing Transmission Time is calculated by: C (ms) = N X Dwell (0.3ms); where C is the Closing Time, N is the number of spectrum analyzer sampling bins (intermittent control signals) showing a U-NII transmission and Dwell is the dwell time per bin.
- 8) Measurement the EUT for more than 30 minutes following the channel move time to verify that no transmission or beacons occur on this channel.

Please Refer to Appendix for Details



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7.16 U-NII Detection Bandwidth

Test Requirement KDB 905462 D02 Section 5.1

Test Method: KDB 905462 D02 Section 7.8.1

Limit:

Test item	Limit	Applicability	
		Master Device or client with Radar Detection	Client without Radar Detection
Non-occupancy period	Minimum 30 minutes	Yes	Not required
Channel Availability Check Time	60 seconds	Yes	Not required
Channel Move Time	10 seconds See Note 1.	Yes	Yes
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.	Yes	Yes
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.	Yes	Not required
<p>Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.</p> <p>Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.</p> <p>Note 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.</p>			

7.16.1 E.U.T. Operation

Operating Environment:

Temperature: 23.0 °C

Humidity: 41.3 % RH

Atmospheric Pressure: 1020 mbar

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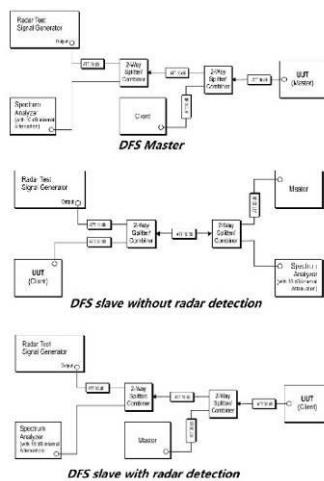
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7.16.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	08	Normal operating_Keep the EUT communication with the companion device.

7.16.3 Test Setup Diagram


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7.16.4 Measurement Procedure and Data

1. Set up the DFS timing monitoring equipment and Set up the overall system for either radiated or conducted coupling to the UUT.

Adjust the equipment to produce a single Burst of any one of the Short Pulse Radar Types 0 - 4 at the center frequency of the UUT Operating Channel at the specified DFS Detection Threshold level.

Set the UUT up as a standalone device (no associated Client or Master, as appropriate) and no traffic. Frame based systems will be set to a talk/listen ratio reflecting the worst case (maximum) that is user configurable during this test.

2. Generate a single radar Burst, and note the response of the UUT. Repeat for a minimum of 10 trials. The UUT must detect the Radar Waveform within the DFS band using the specified U-NII Detection Bandwidth criterion.

3. Starting at the center frequency of the UUT operating Channel, increase the radar frequency in 5 MHz steps, repeating the above test sequence, until the detection rate falls below the U-NII Detection Bandwidth criterion. Repeat this measurement in 1MHz steps at frequencies 5 MHz below where the detection rate begins to fall. Record the highest frequency (denote as FH) at which detection is greater than or equal to the U-NII Detection Bandwidth criterion. Recording the detection rate at frequencies above FH is not required to demonstrate compliance.

4. Starting at the center frequency of the UUT operating Channel, decrease the radar frequency in 5 MHz steps, repeating the above test sequence, until the detection rate falls below the U-NII Detection Bandwidth criterion. Repeat this measurement in 1MHz steps at frequencies 5 MHz above where the detection rate begins to fall. Record the lowest frequency (denote as FL) at which detection is greater than or equal to the U-NII Detection Bandwidth criterion. Recording the detection rate at frequencies below FL is not required to demonstrate compliance.

5. The U-NII Detection Bandwidth is calculated as follows:

U-NII Detection Bandwidth = FH - FL

The U-NII Detection Bandwidth must meet the U-NII Detection Bandwidth criterion. Otherwise, the UUT does not comply with DFS requirements. This is essential to ensure that the UUT is capable of detecting Radar Waveforms across the same frequency spectrum that contains the significant energy from the system. In the case that the U-NII Detection Bandwidth is greater than or equal to the 99 percent power bandwidth for the measured FH and FL, the test can be truncated and the U-NII Detection Bandwidth can be reported as the measured FH and FL.

Please Refer to Appendix for Details



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8 Test Setup Photo

Refer to Appendix - Test Setup Photo for SZCR2501000164TL

9 EUT Constructional Details (EUT Photos)

Refer to External and Internal Photos for SZCR2501000164TL



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10 Appendix

1. Duty Cycle

1.1 Test Result

1.1.1 Ant1

Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
802.11a	SISO	5180	2.028	2.110	96.11	0.17	0.03
		5200	2.029	2.110	96.16	0.17	0.23
		5240	2.029	2.124	95.53	0.20	0.70
		5260	2.028	2.109	96.16	0.17	0.07
		5300	2.028	2.123	95.53	0.20	0.80
		5320	2.028	2.123	95.53	0.20	0.80
		5500	2.030	2.111	96.16	0.17	0.07
		5580	2.028	2.109	96.16	0.17	0.03
		5700	2.029	2.111	96.12	0.17	0.10
		5745	2.028	2.123	95.53	0.20	0.80
		5785	2.028	2.109	96.16	0.17	0.07
		5825	2.029	2.110	96.16	0.17	0.10
802.11n (HT20)	MIMO	5180	4.959	5.058	98.04	0.09	0.42
		5200	4.959	5.038	98.43	0.07	0.04
		5240	4.960	5.042	98.37	0.07	0.11
		5260	4.959	5.036	98.47	0.07	0.04
		5300	4.963	5.053	98.22	0.08	0.35
		5320	4.959	5.039	98.41	0.07	0.04
		5500	4.961	5.051	98.22	0.08	0.28
		5580	4.960	5.038	98.45	0.07	0.04
		5700	4.959	5.038	98.43	0.07	0.07
		5745	4.961	5.040	98.43	0.07	0.07
		5785	4.961	5.051	98.22	0.08	0.28
		5825	4.961	5.051	98.22	0.08	0.28
802.11n (HT40)	MIMO	5190	2.408	2.492	96.63	0.15	0.07
		5230	2.407	2.491	96.63	0.15	0.07
		5270	2.408	2.492	96.63	0.15	0.07
		5310	2.407	2.491	96.63	0.15	0.07

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		5510	2.408	2.490	96.71	0.15	0.04
		5550	2.409	2.491	96.71	0.15	0.10
		5670	2.408	2.504	96.17	0.17	0.70
		5755	2.409	2.492	96.67	0.15	0.10
		5795	2.408	2.490	96.71	0.15	0.10
802.11ac (VHT20)	MIMO	5180	4.971	5.053	98.38	0.07	0.04
		5200	4.971	5.054	98.36	0.07	0.07
		5240	4.973	5.069	98.11	0.08	0.31
		5260	4.970	5.053	98.36	0.07	0.04
		5300	4.971	5.054	98.36	0.07	0.07
		5320	4.972	5.055	98.36	0.07	0.07
		5500	4.971	5.054	98.36	0.07	0.04
		5580	4.971	5.054	98.36	0.07	0.07
		5700	4.972	5.055	98.36	0.07	0.11
		5745	4.971	5.054	98.36	0.07	0.07
		5785	4.971	5.054	98.36	0.07	0.07
		5825	4.972	5.053	98.40	0.07	0.04
		5190	2.417	2.499	96.72	0.14	0.13
		5230	2.417	2.500	96.68	0.15	0.07
802.11ac (VHT40)	MIMO	5270	2.417	2.499	96.72	0.14	0.07
		5310	2.416	2.498	96.72	0.14	0.03
		5510	2.417	2.499	96.72	0.14	0.07
		5550	2.416	2.498	96.72	0.14	0.03
		5670	2.416	2.499	96.68	0.15	0.13
		5755	2.417	2.499	96.72	0.14	0.14
		5795	2.416	2.498	96.72	0.14	0.03
		5210	1.136	1.216	93.42	0.30	0.25
		5290	1.137	1.217	93.43	0.30	0.25
802.11ac (VHT80)	MIMO	5530	1.137	1.217	93.43	0.30	0.25
		5610	1.137	1.230	92.44	0.34	1.50
		5775	1.136	1.217	93.34	0.30	0.25

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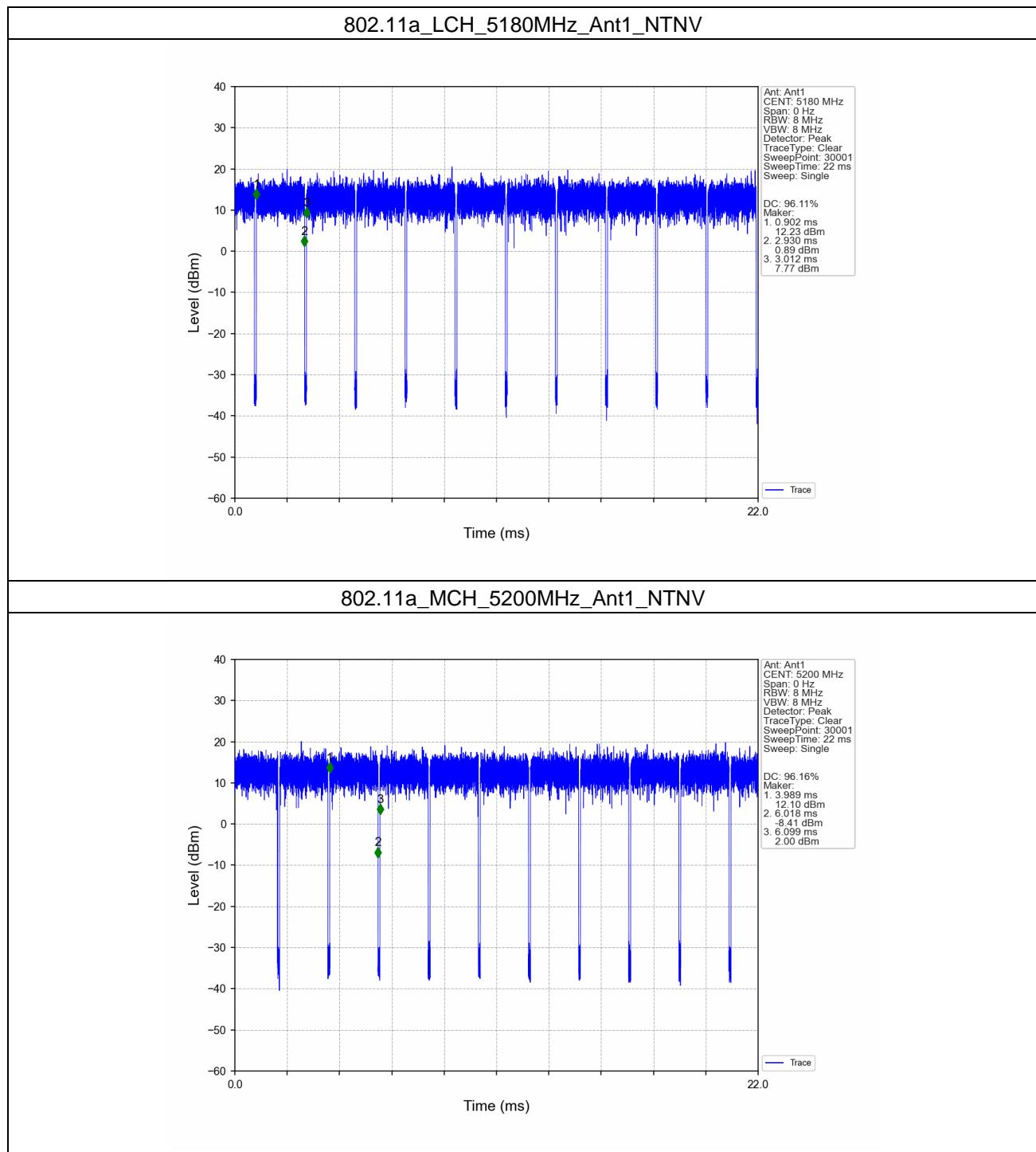
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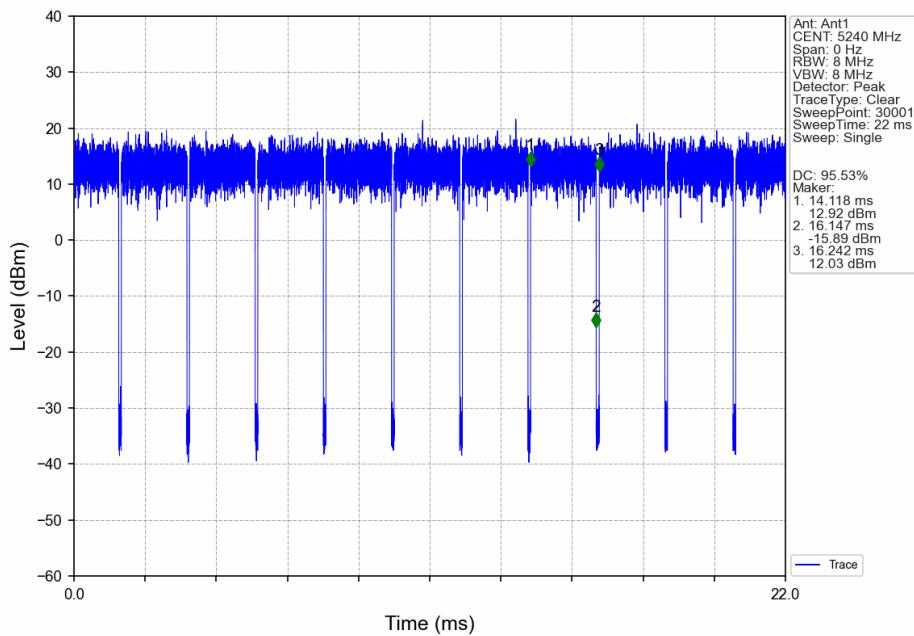
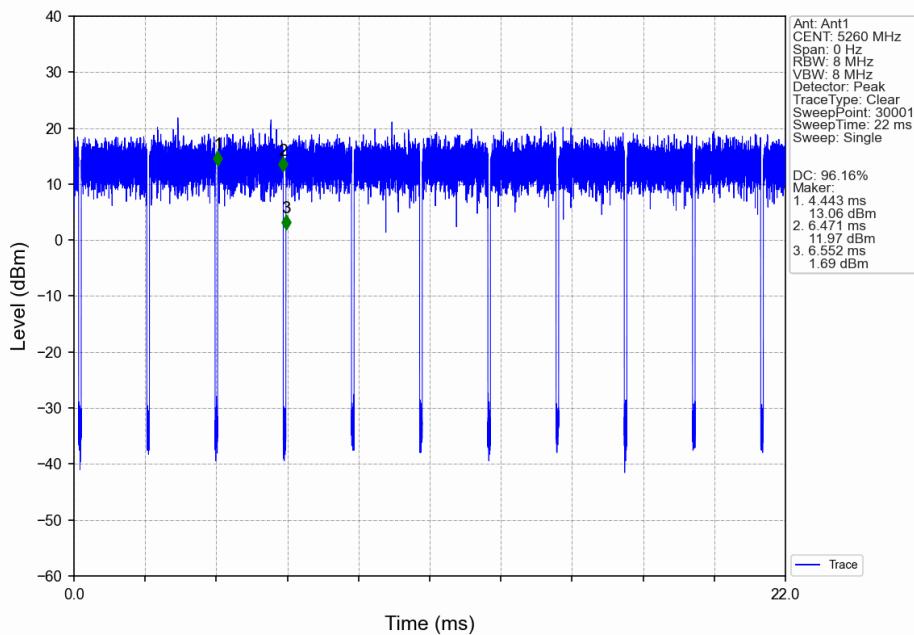
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1.2 Test Graph

1.2.1 Ant1



802.11a_HCH_5240MHz_Ant1_NTNV**802.11a_LCH_5260MHz_Ant1_NTNV**

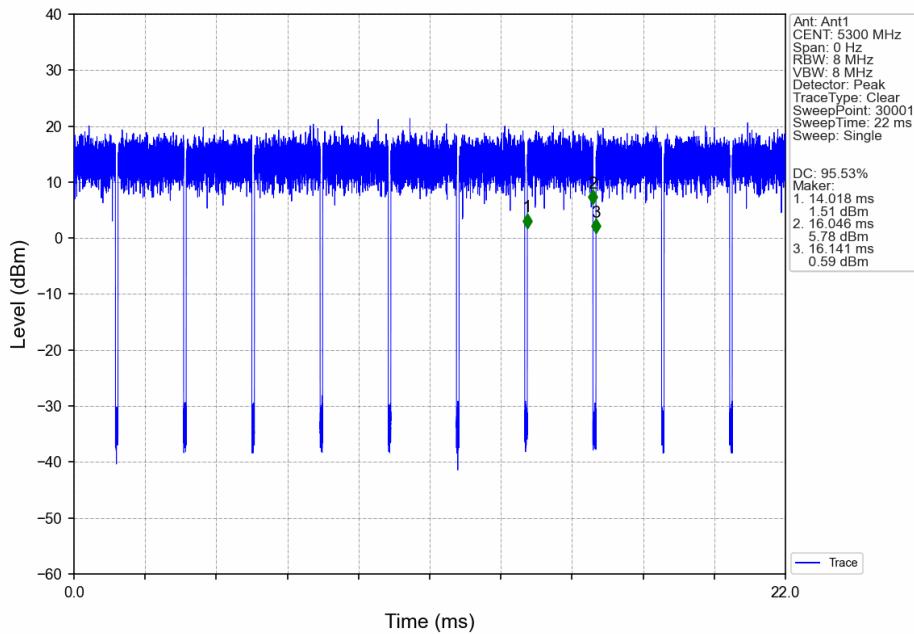
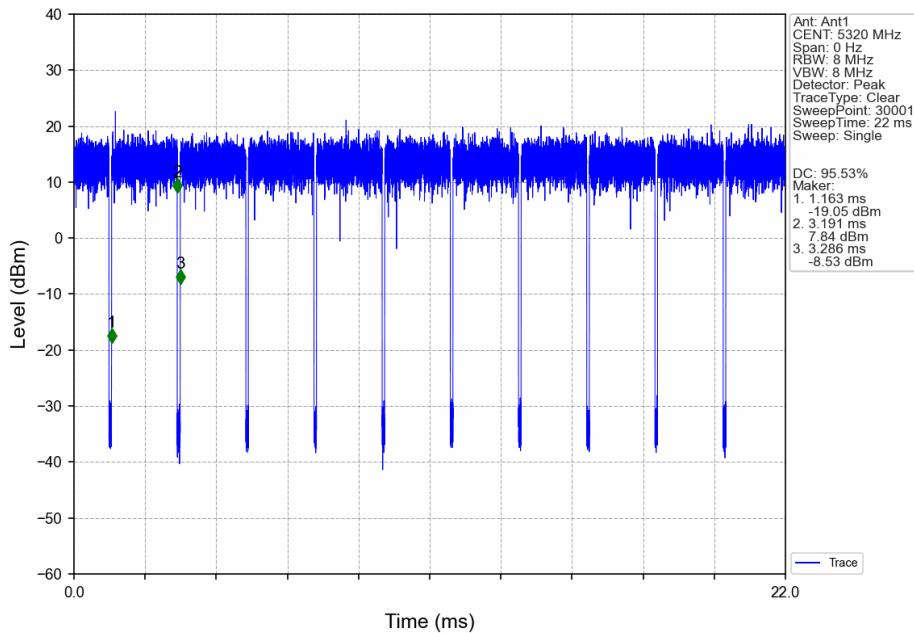
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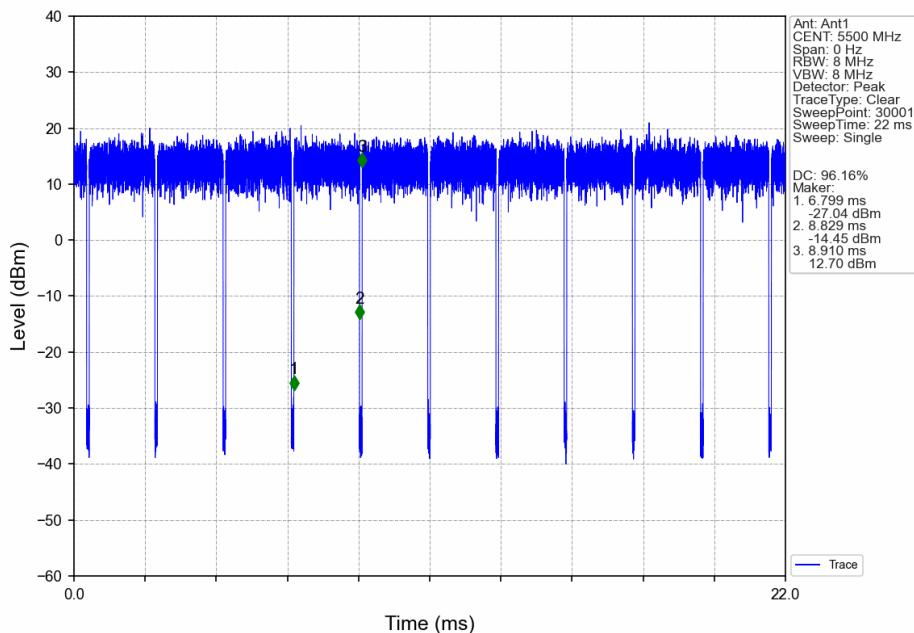
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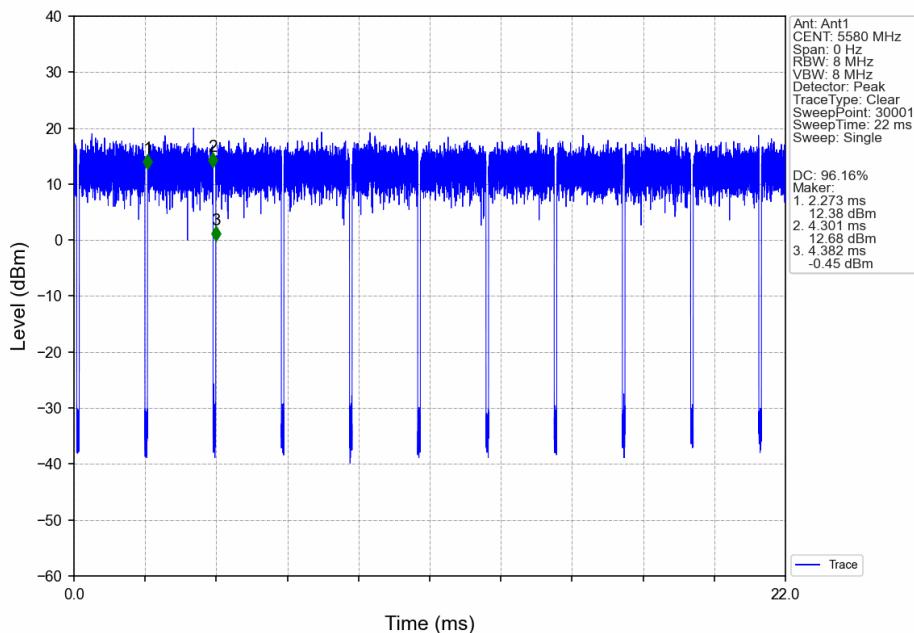
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802.11a_MCH_5300MHz_Ant1_NTNV**802.11a_HCH_5320MHz_Ant1_NTNV**

802.11a_LCH_5500MHz_Ant1_NTNV



802.11a_MCH_5580MHz_Ant1_NTNV



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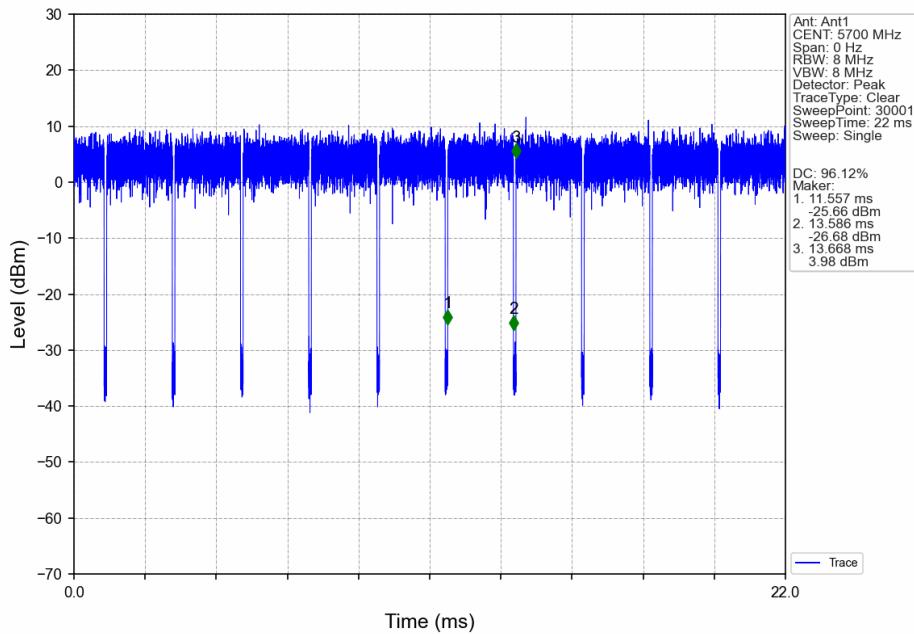
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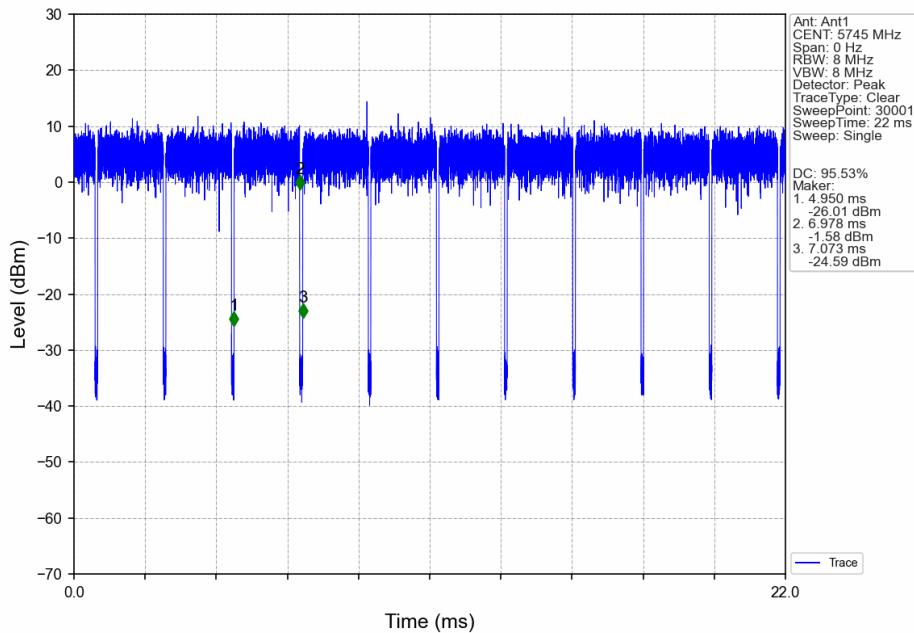
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802.11a_LCH_5745MHz_Ant1_NTNV



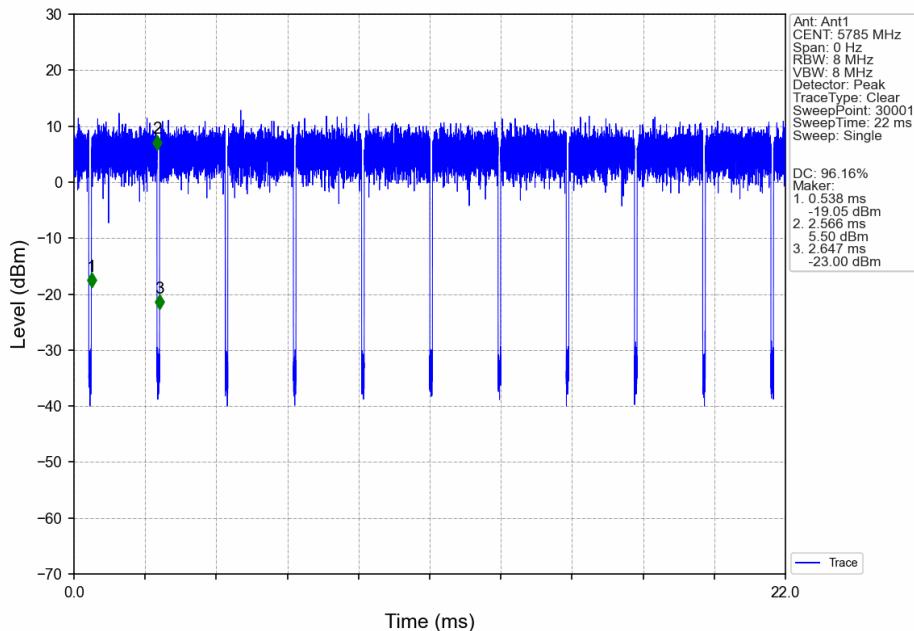
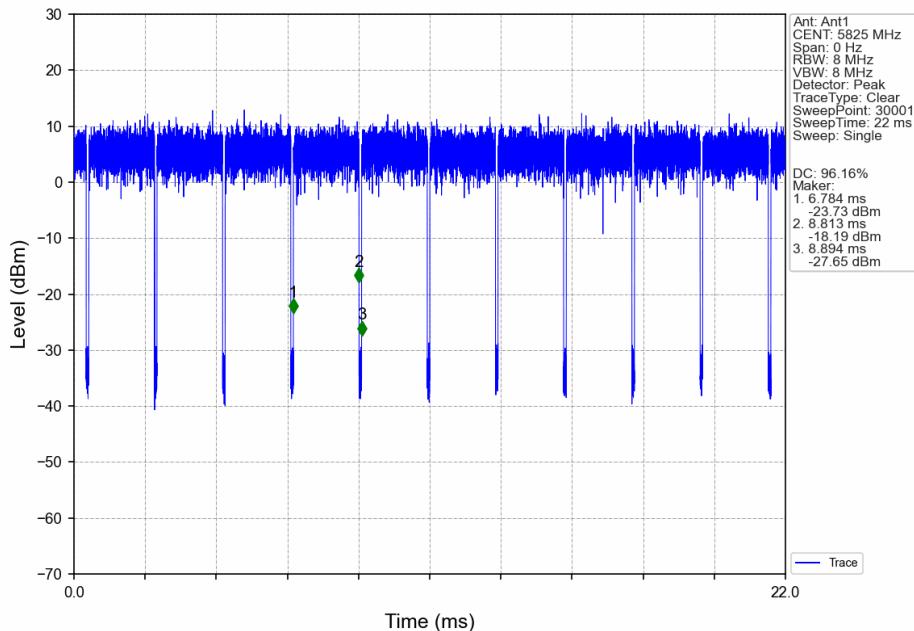
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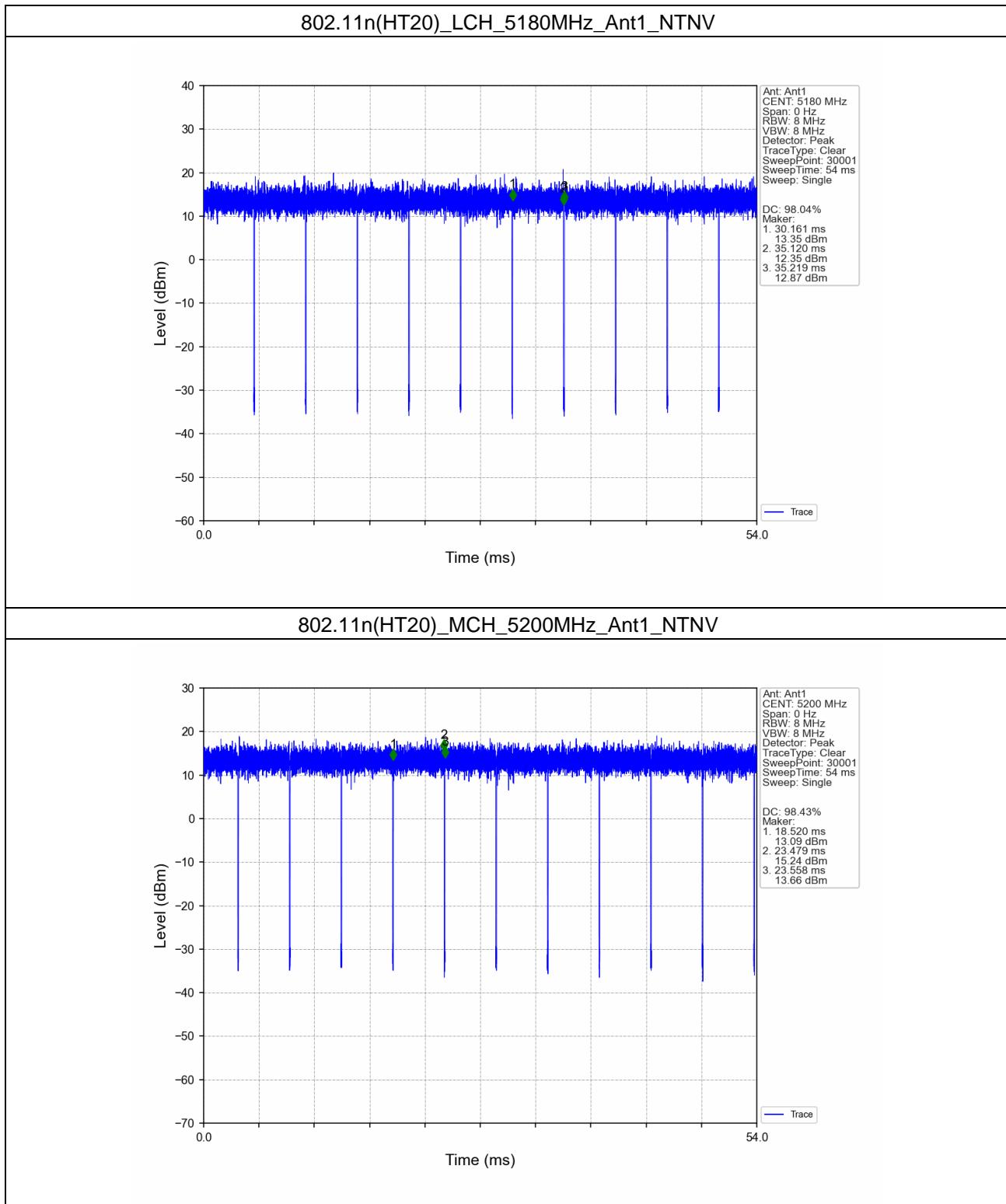
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802.11a_MCH_5785MHz_Ant1_NTNV**802.11a_HCH_5825MHz_Ant1_NTNV**

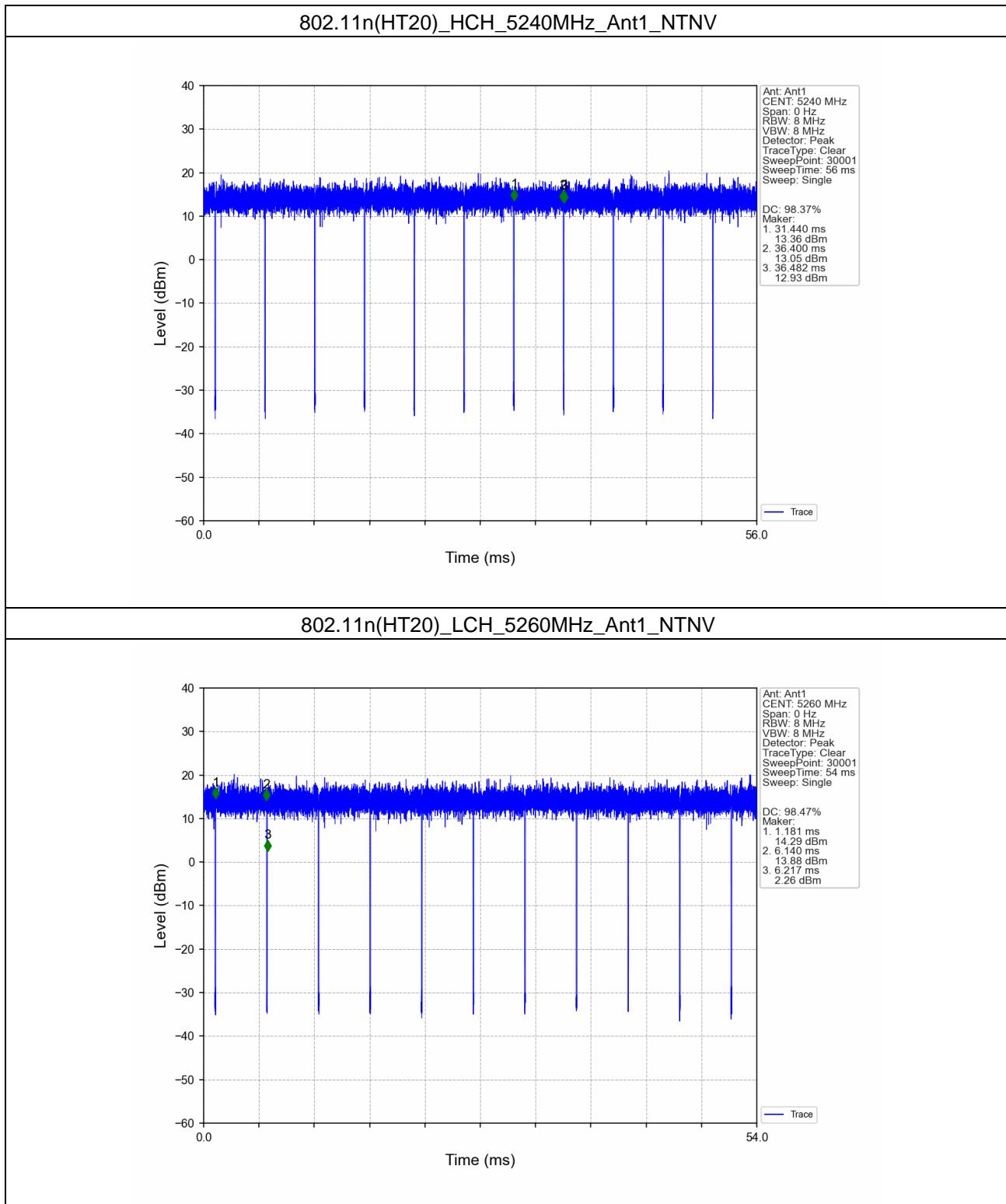
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