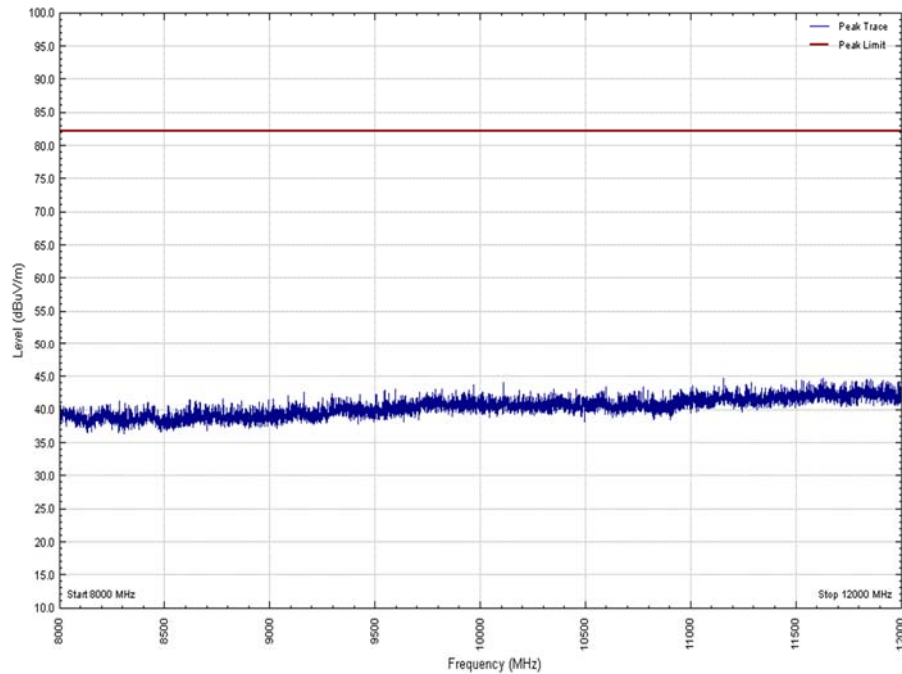
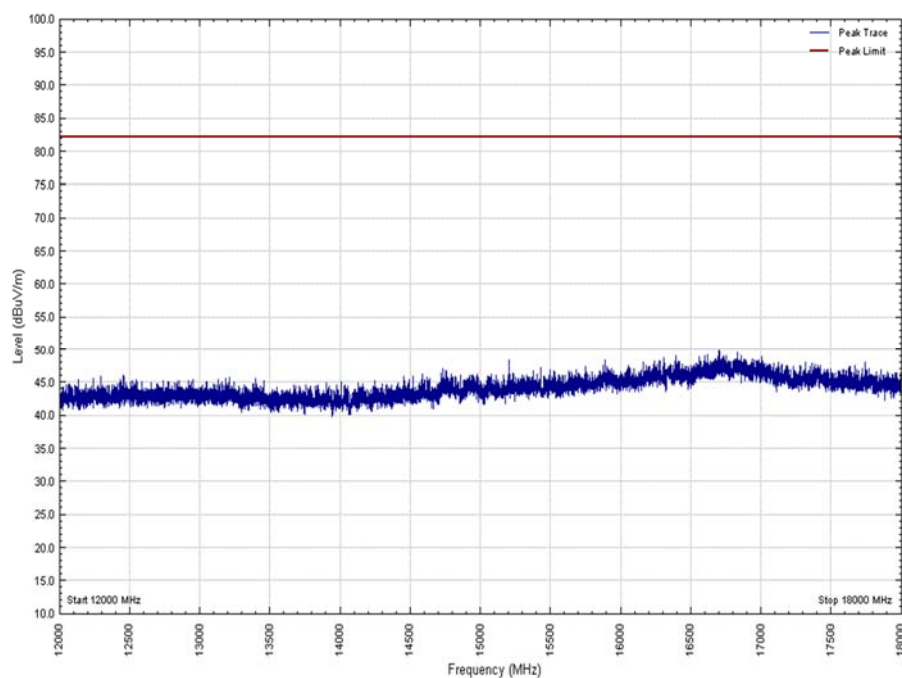


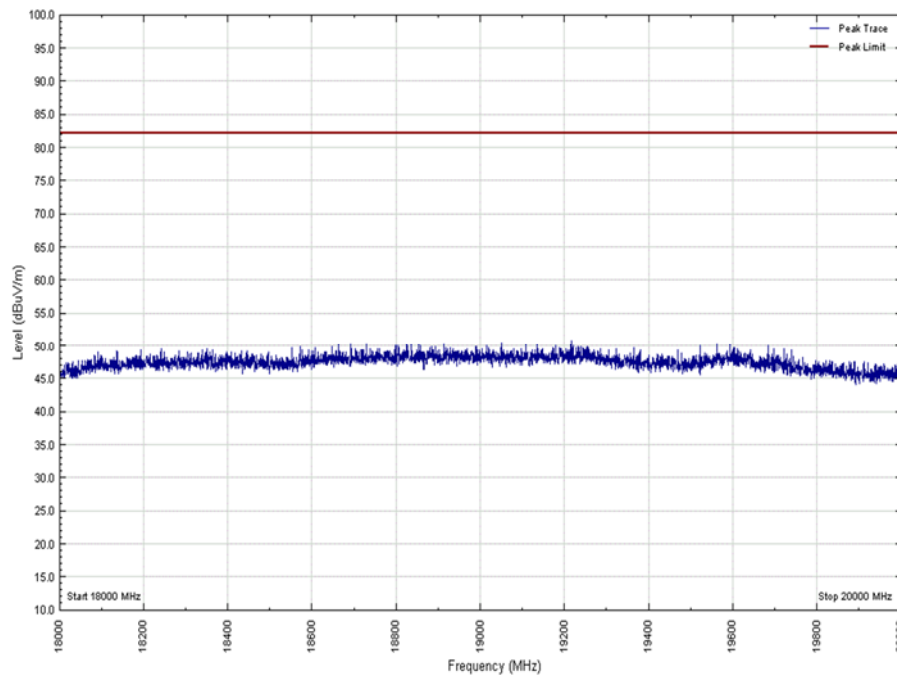
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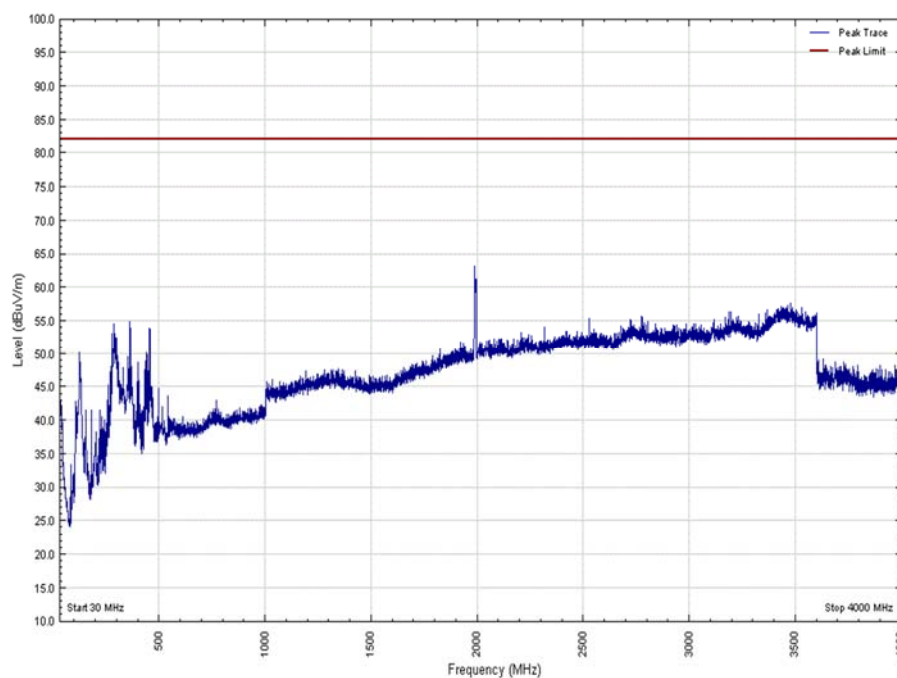
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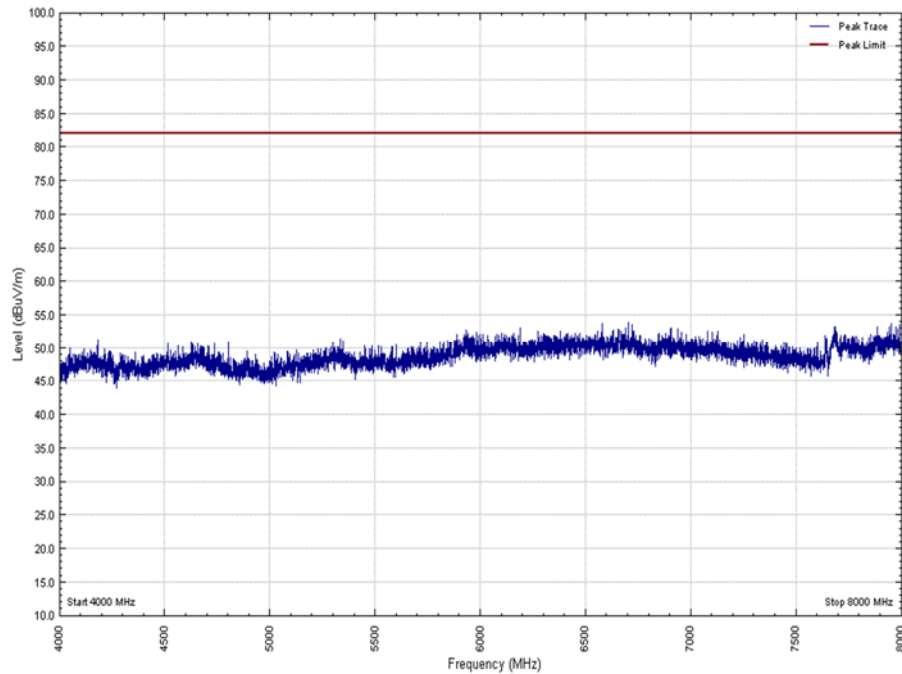
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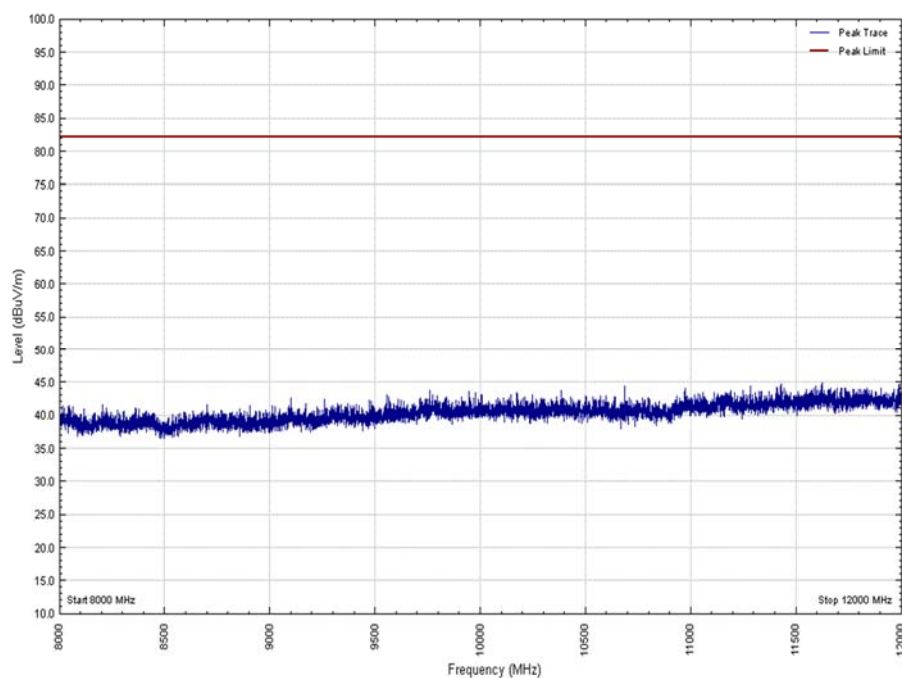
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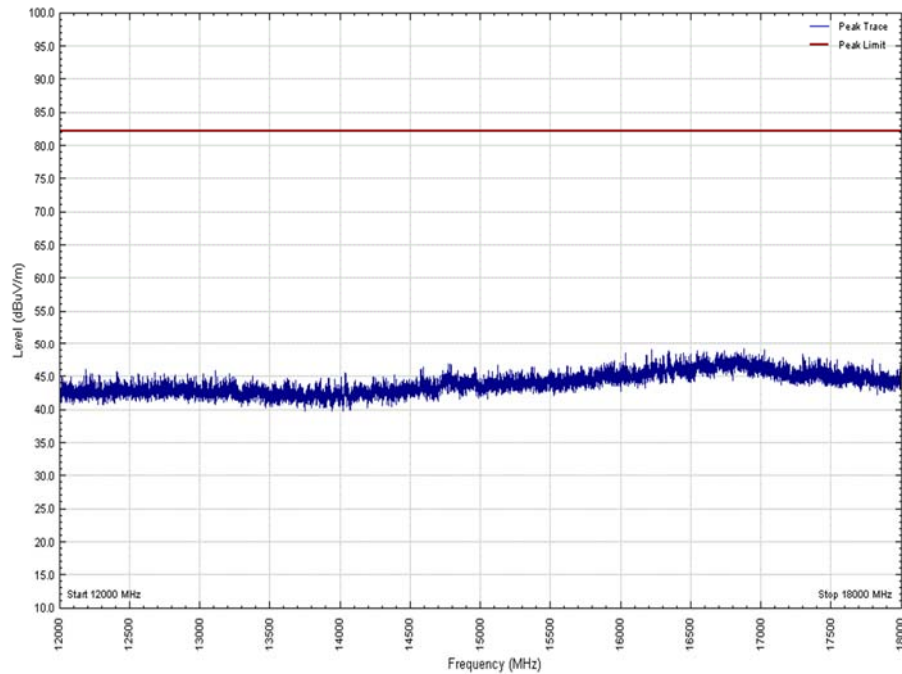
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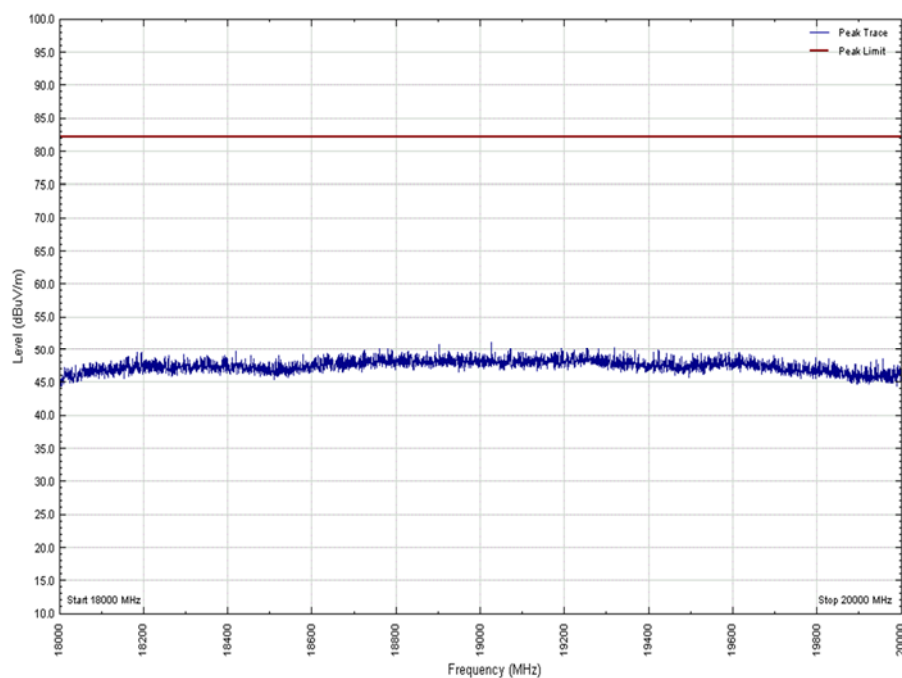
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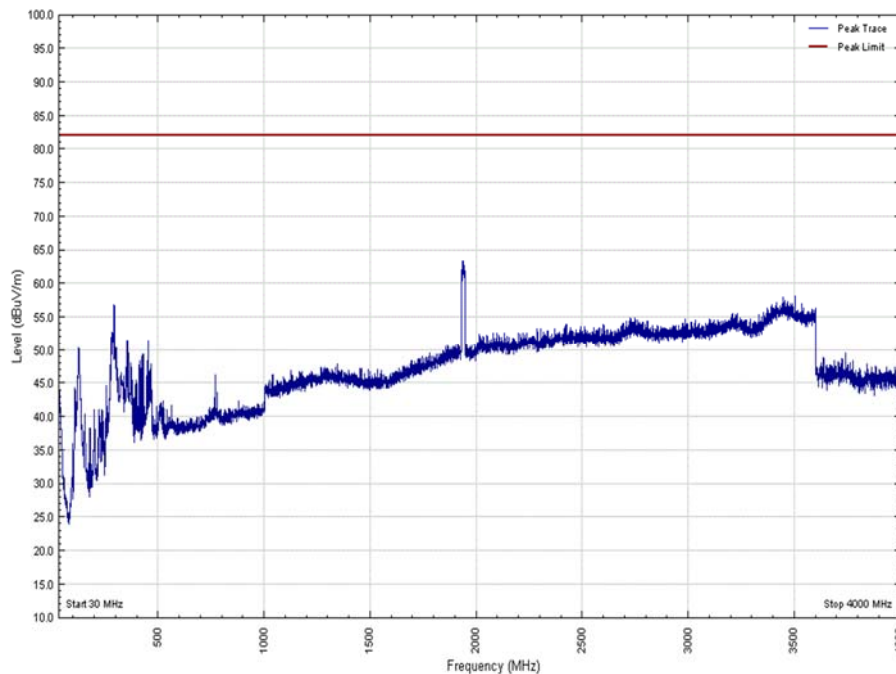
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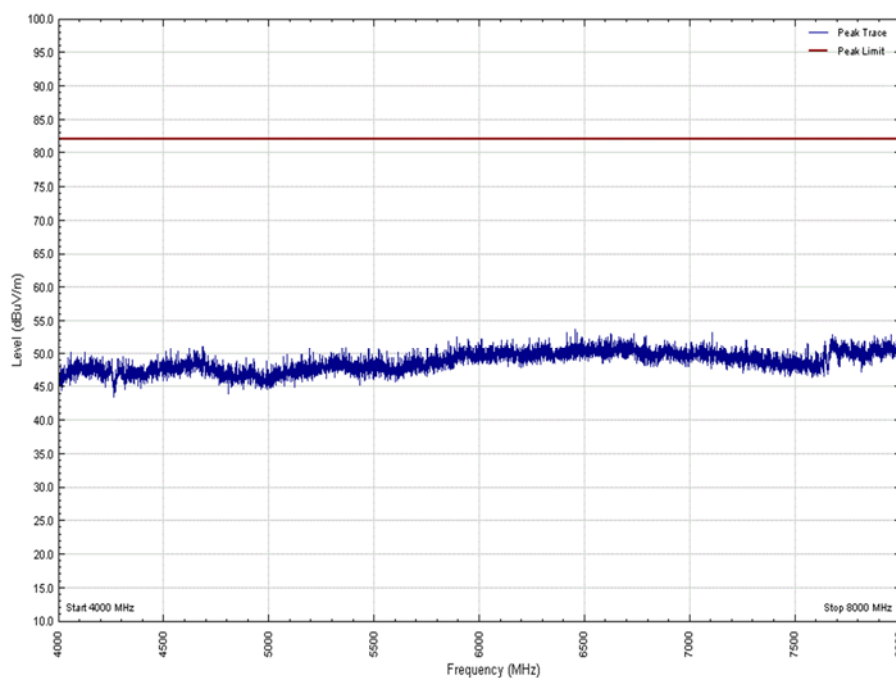
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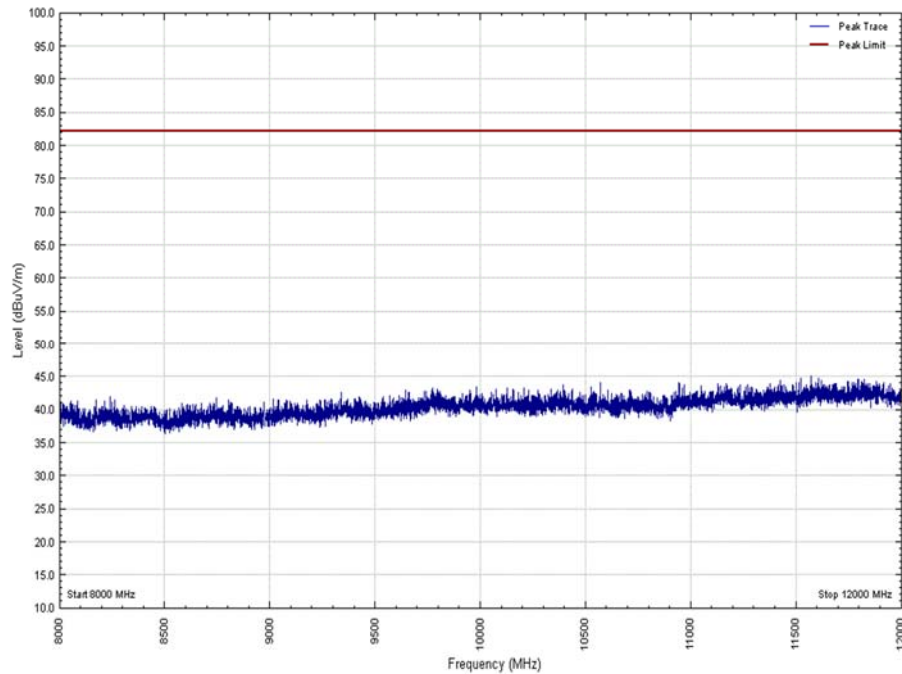
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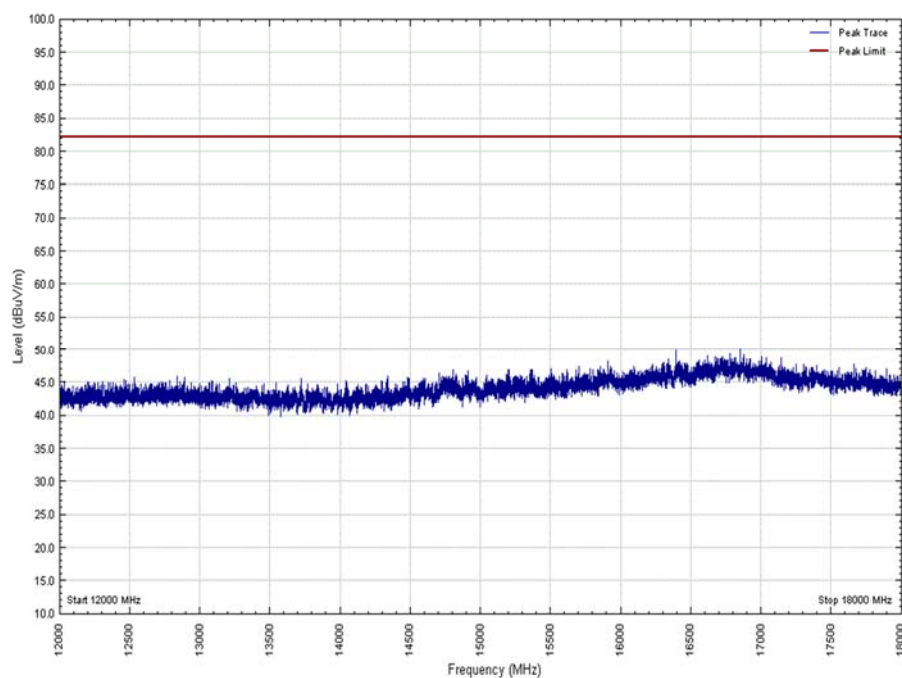
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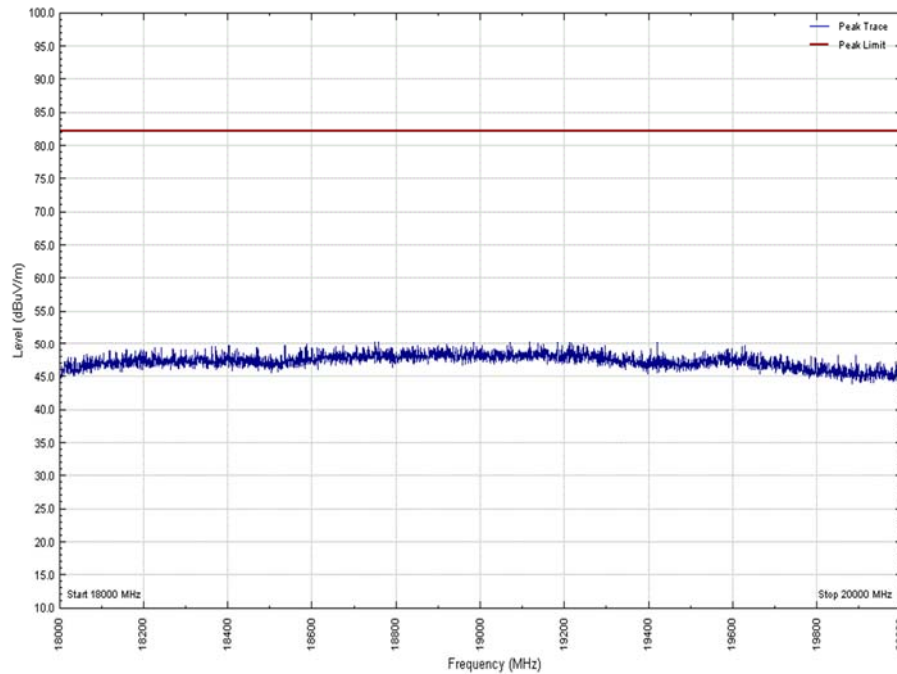
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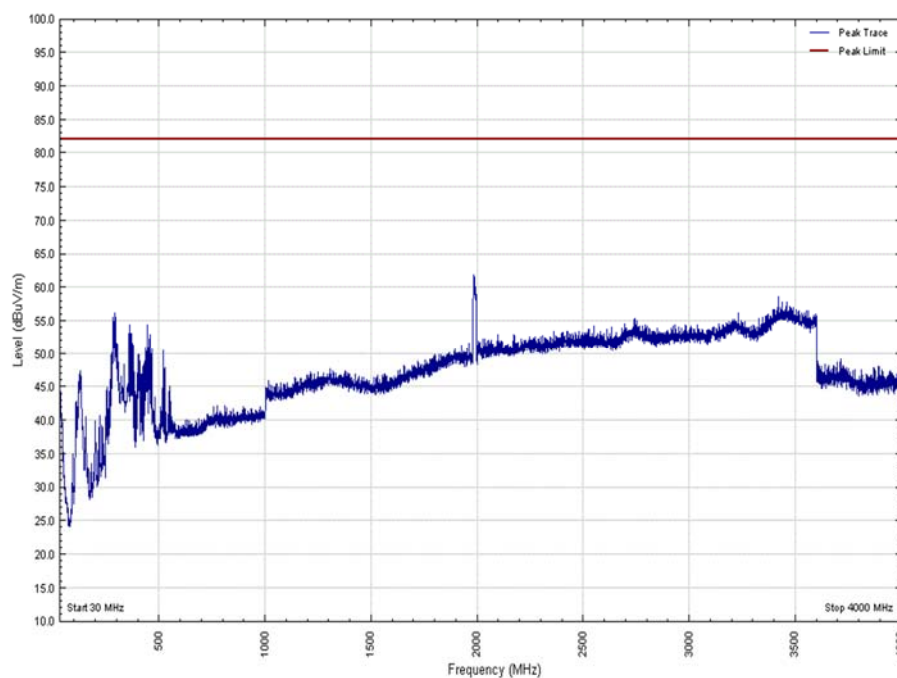
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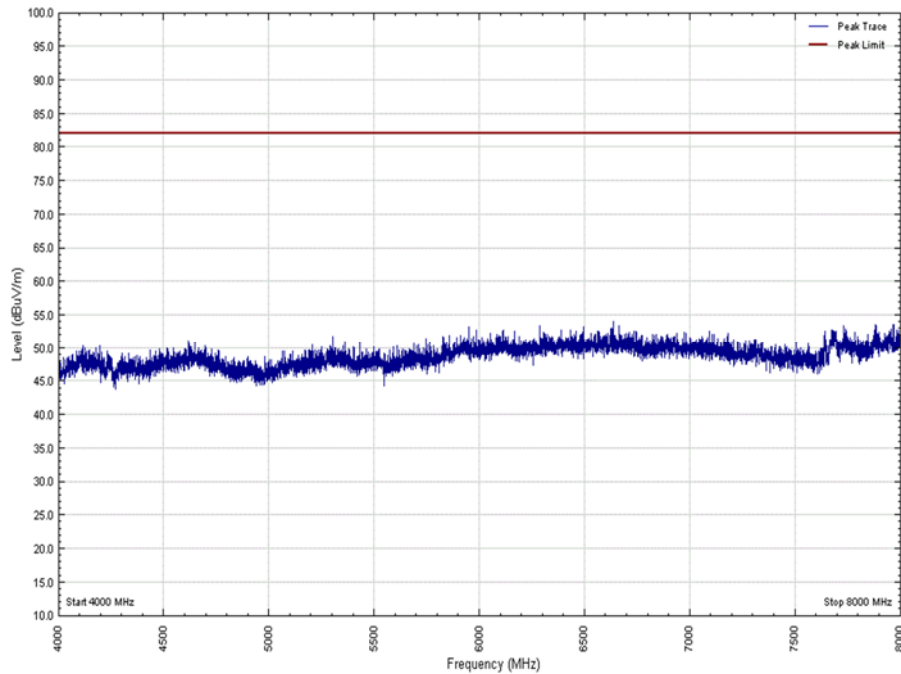
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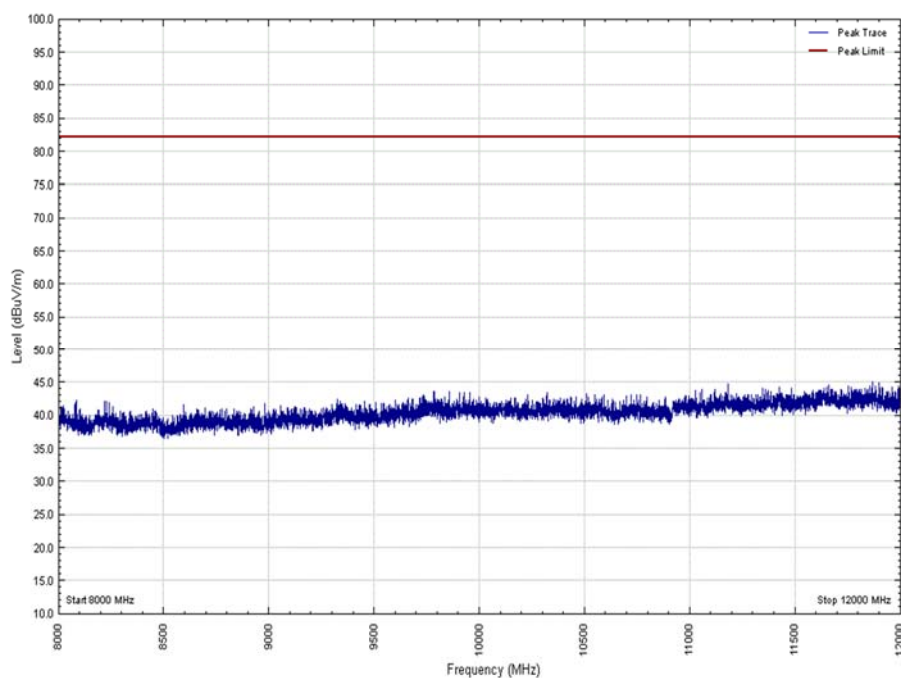
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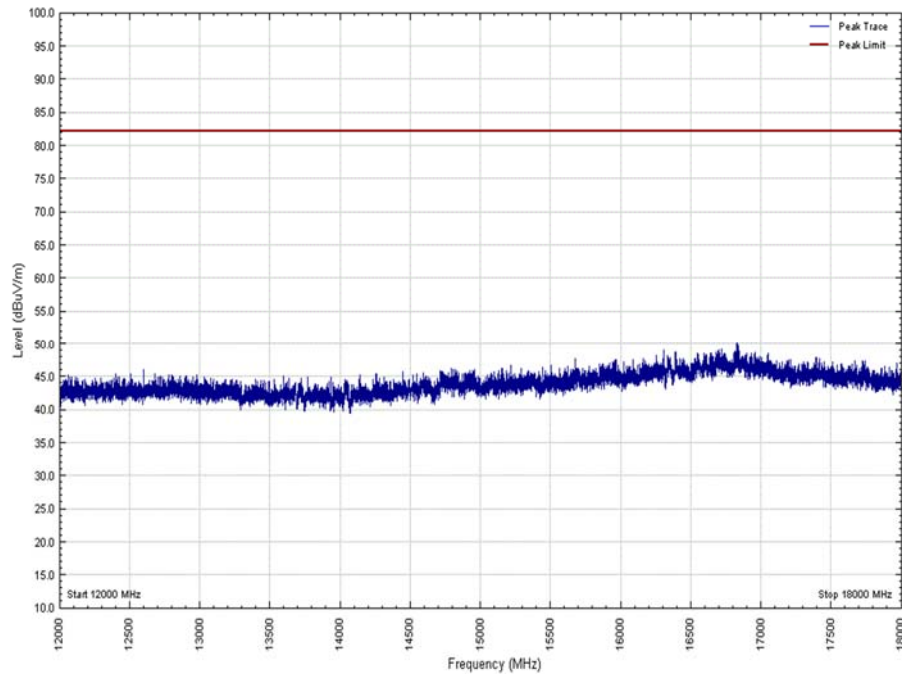
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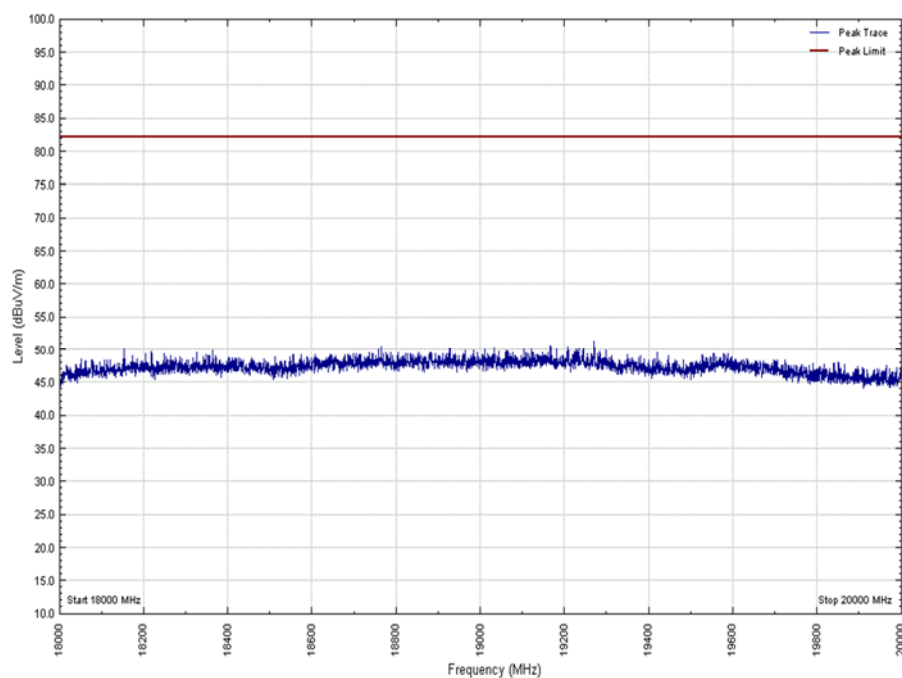
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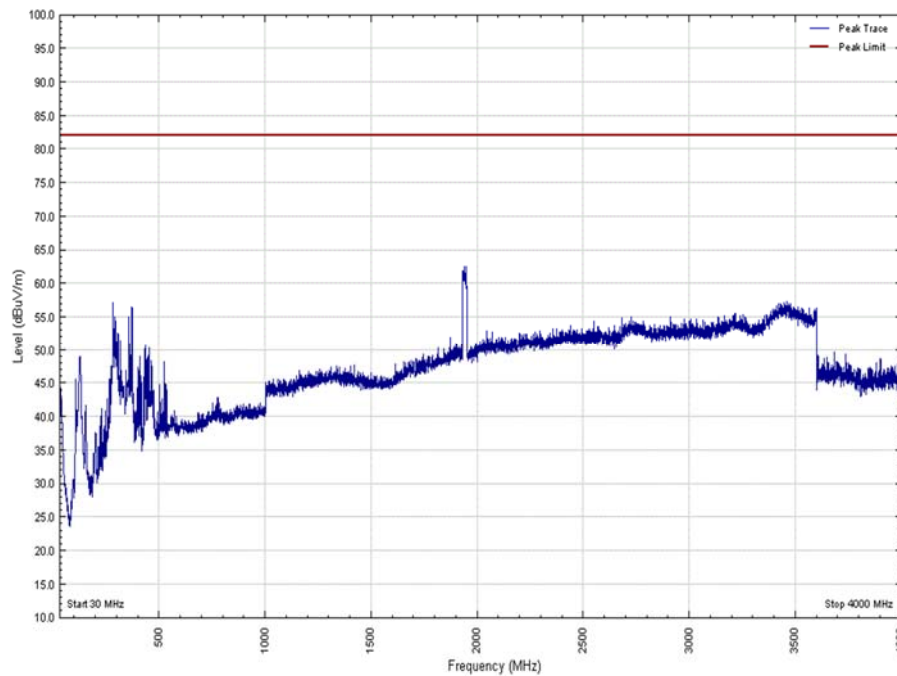
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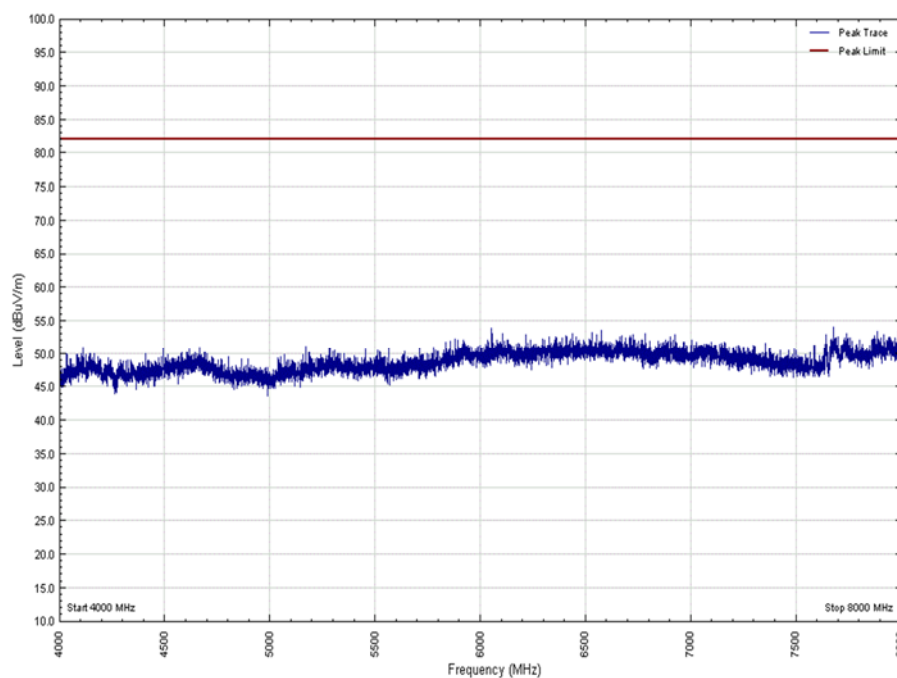
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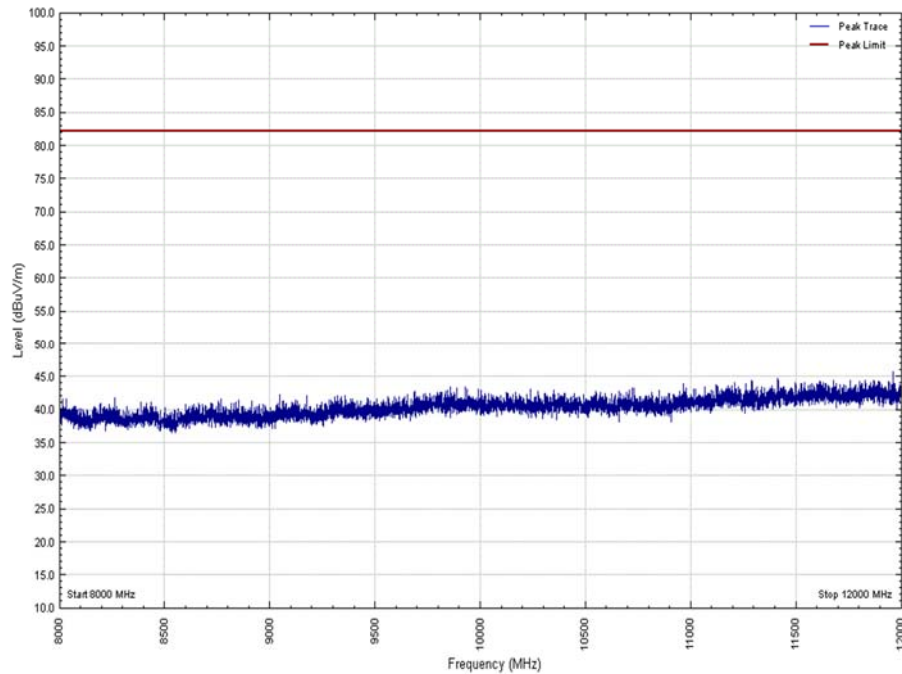
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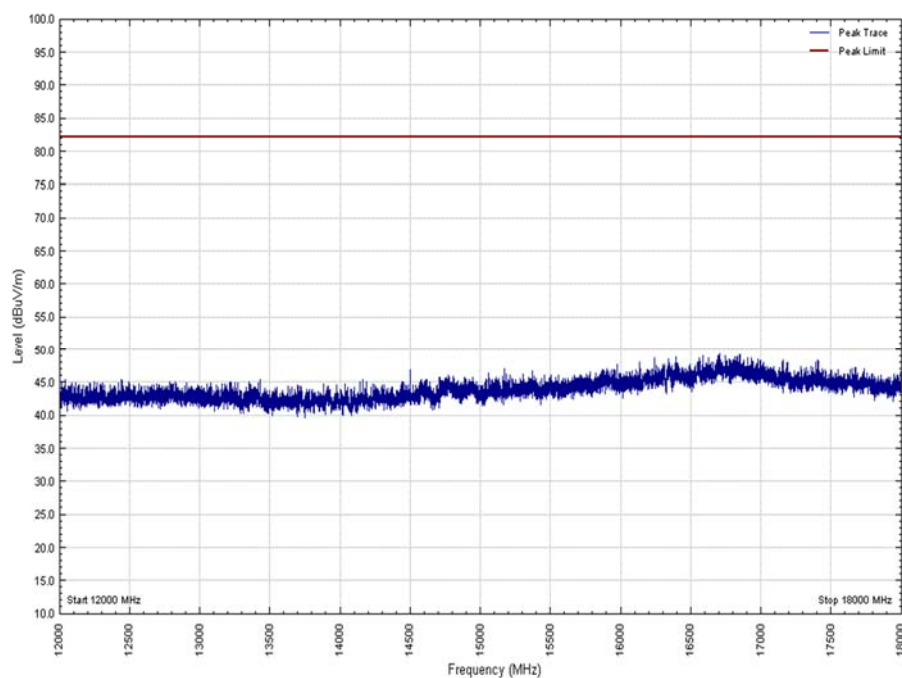
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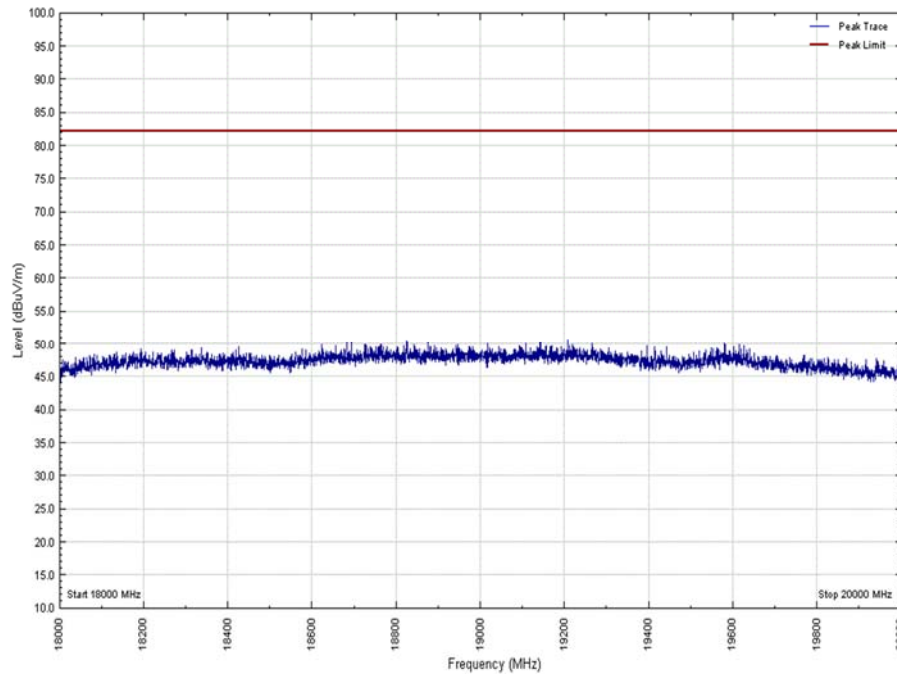
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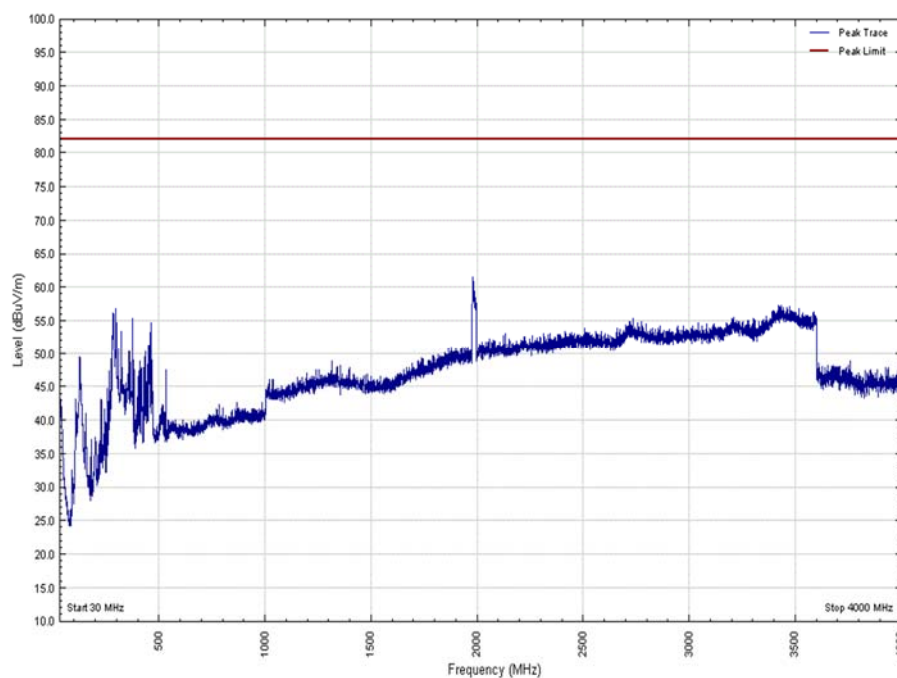
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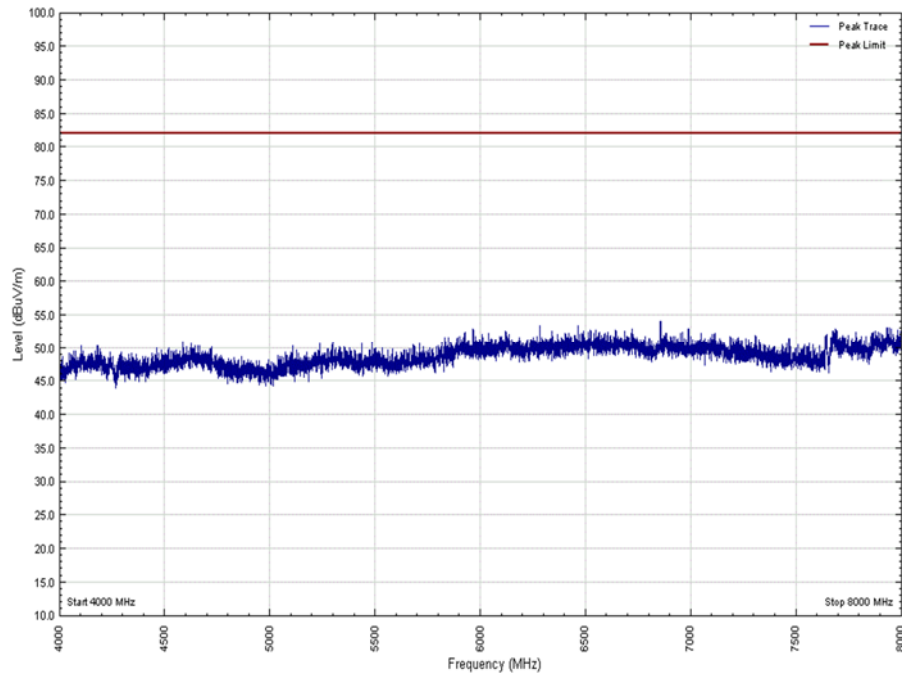
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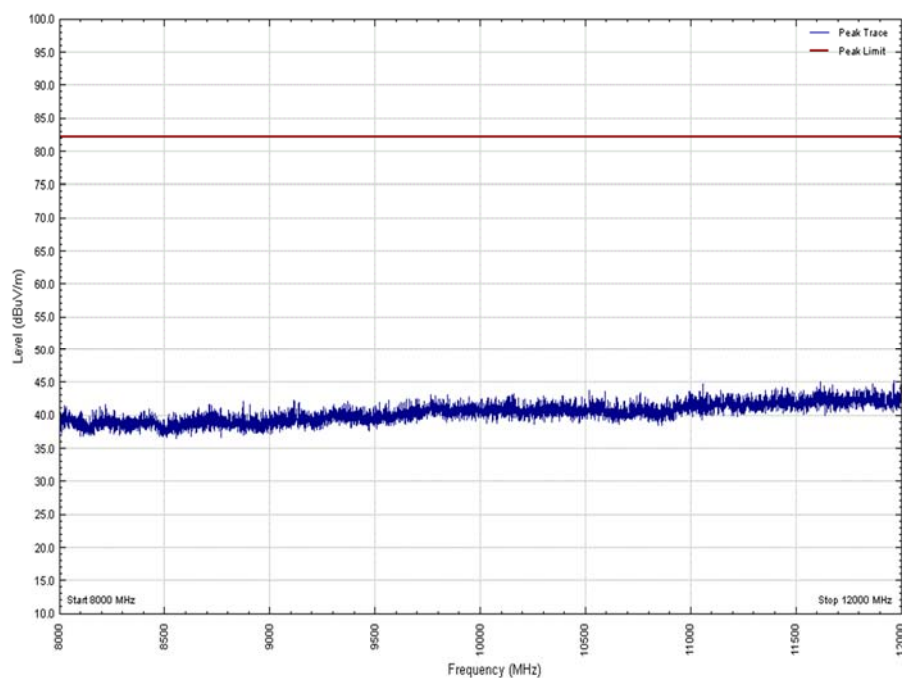
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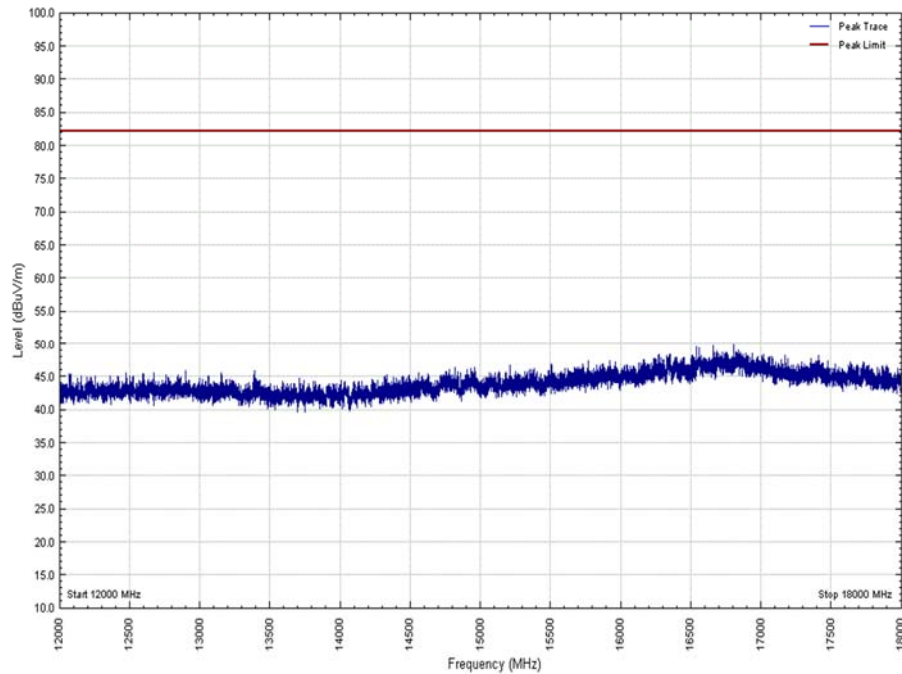
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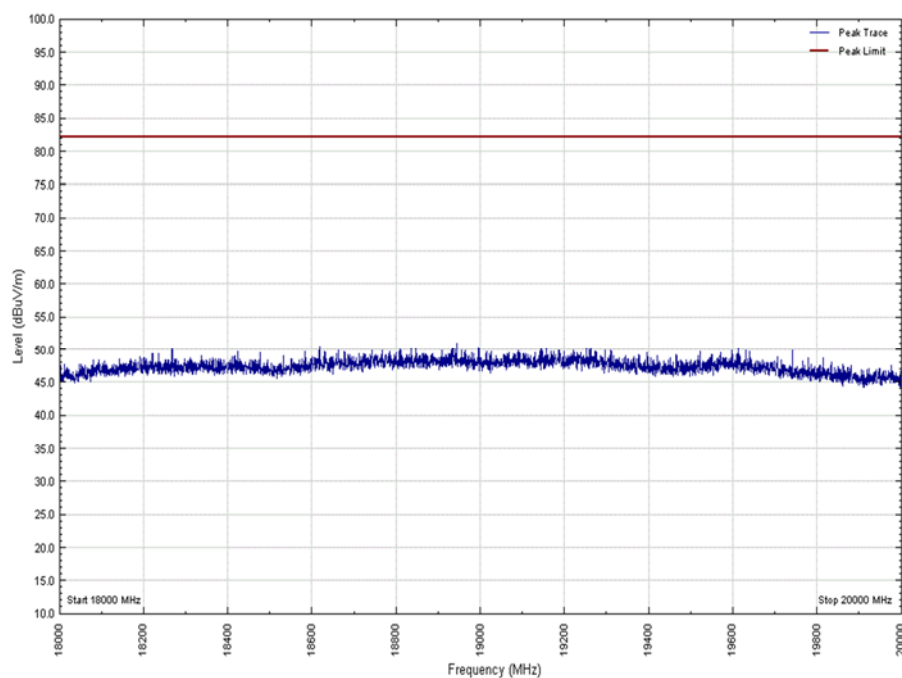
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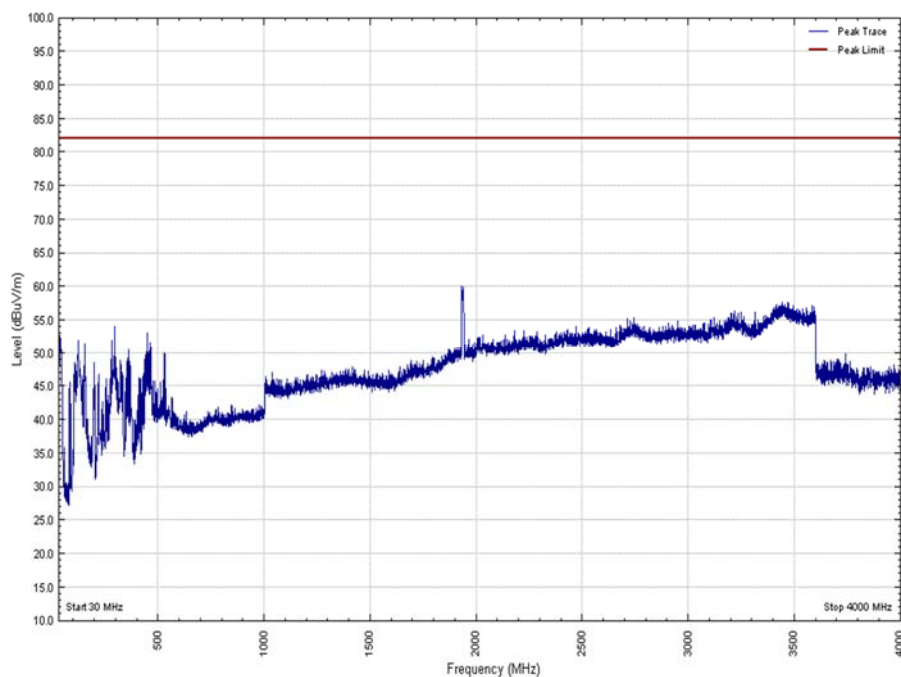
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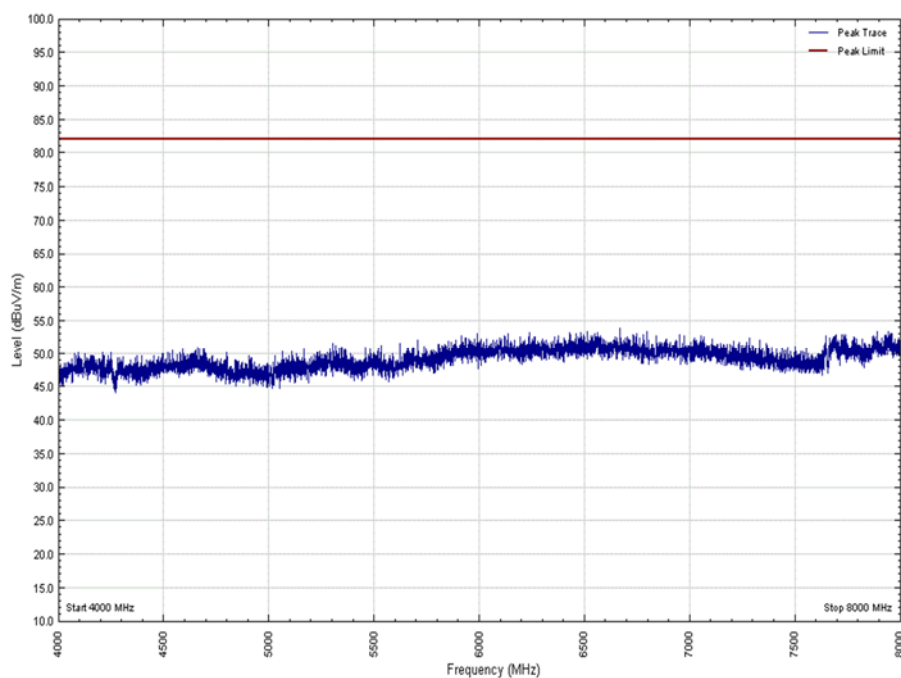
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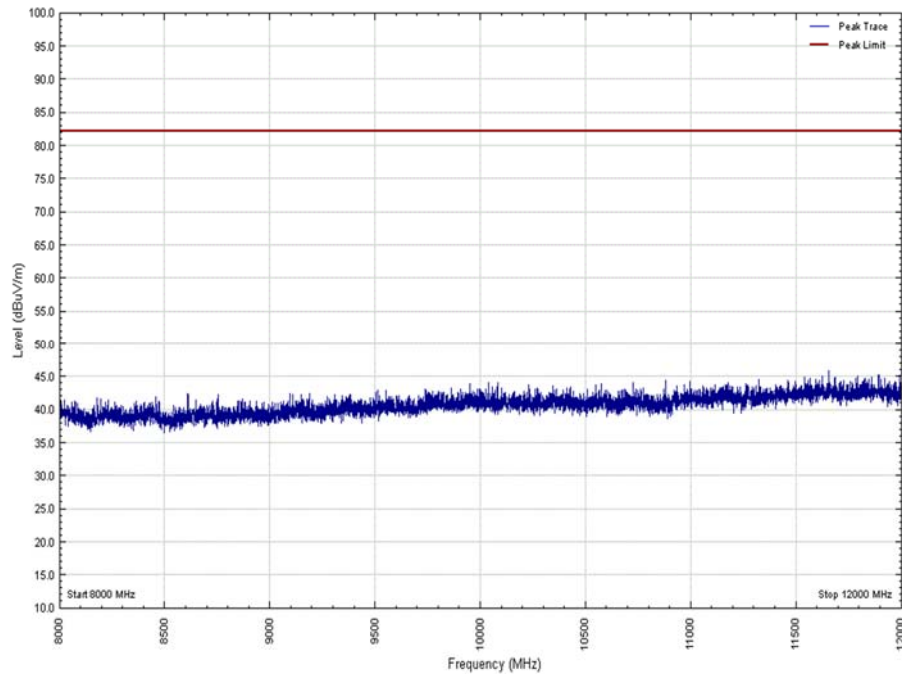
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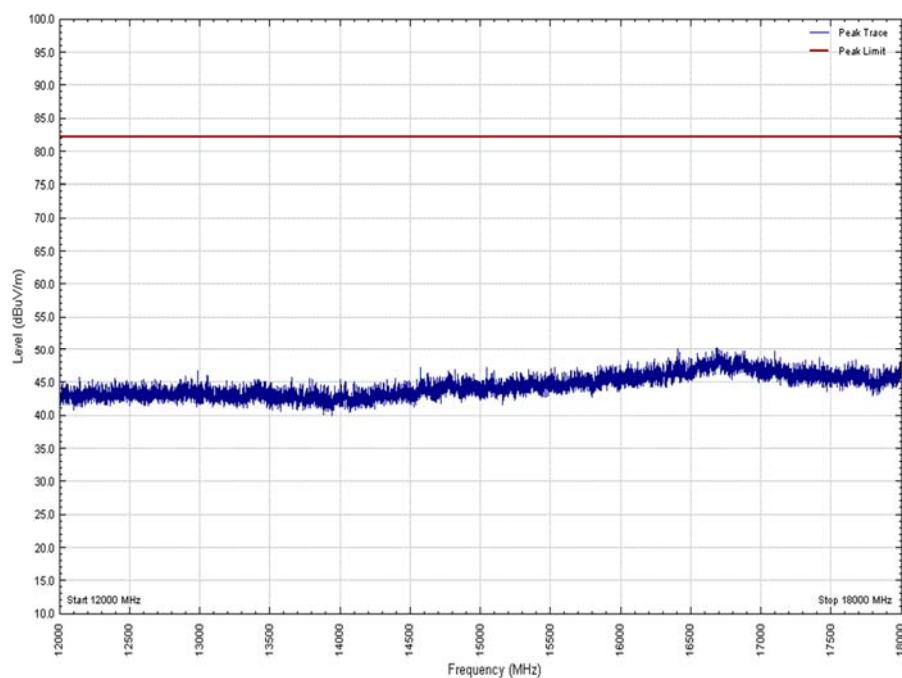
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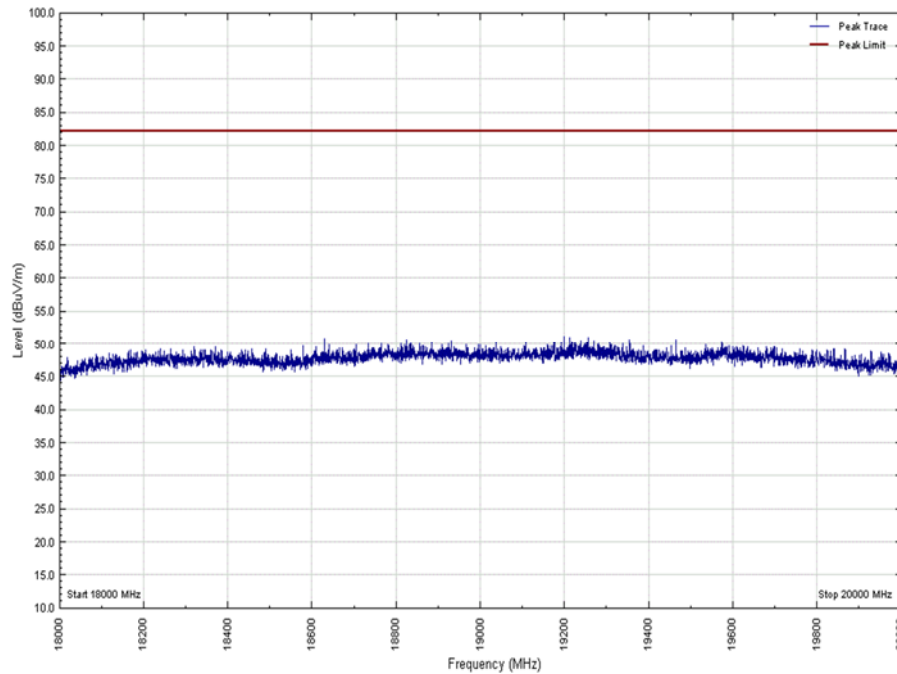
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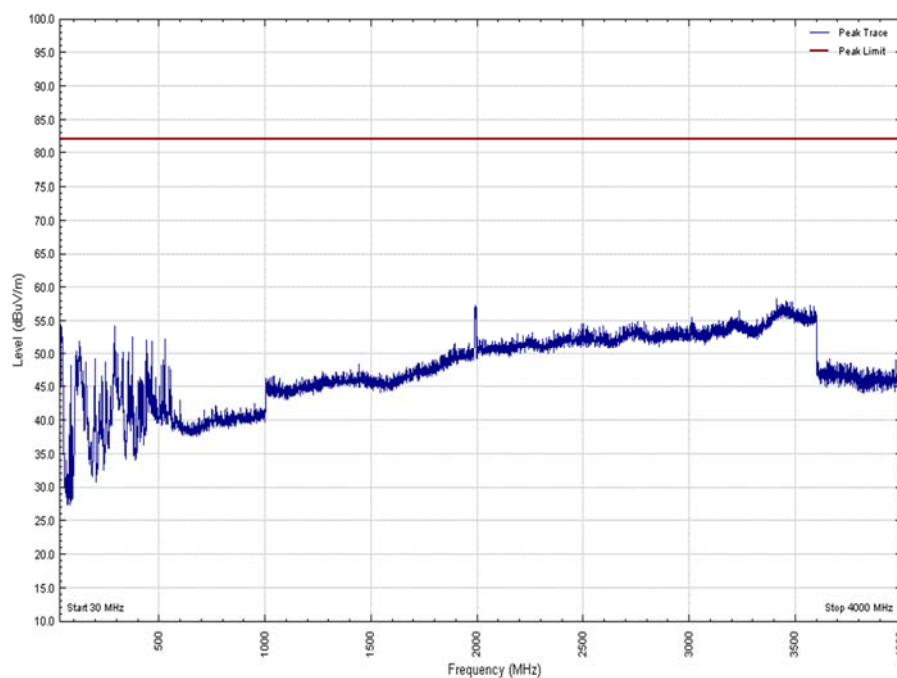
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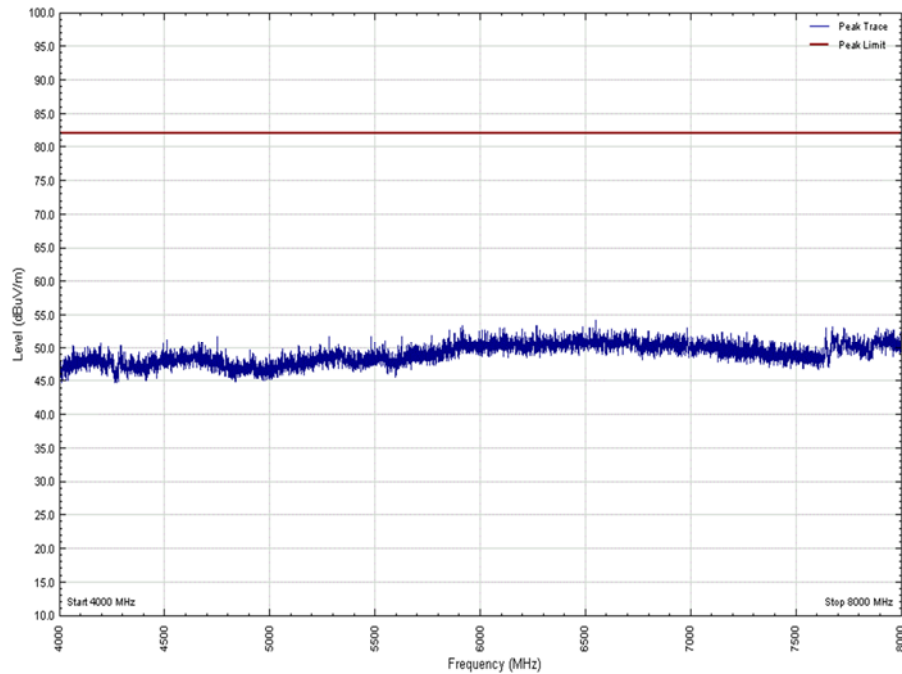
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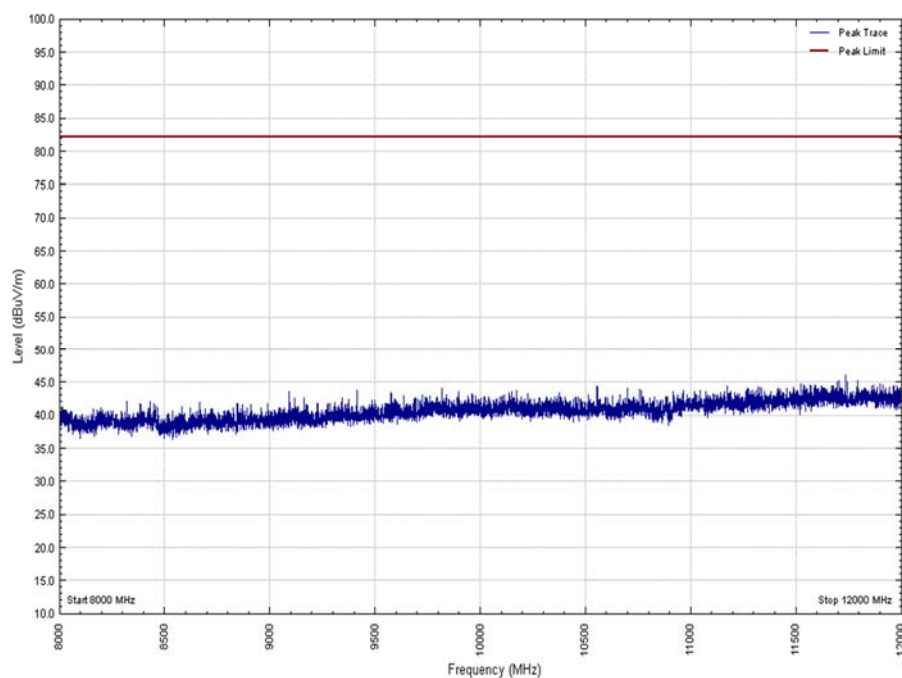
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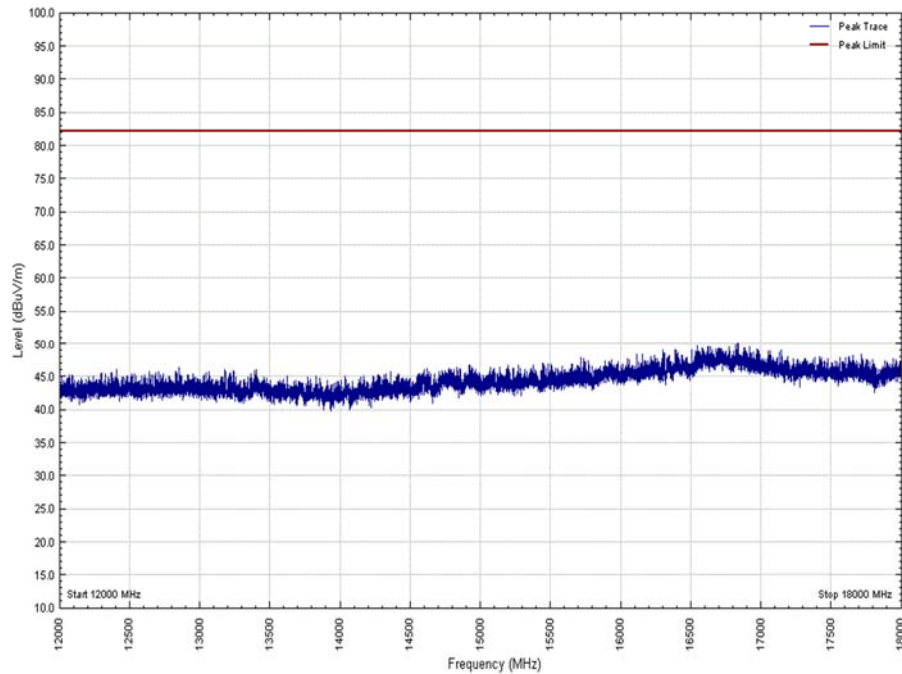
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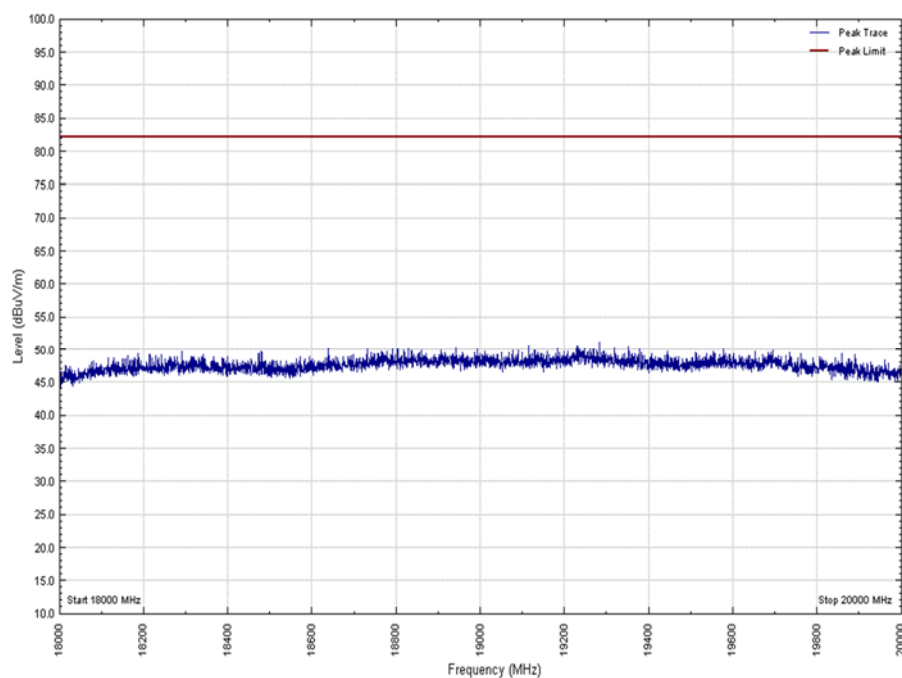
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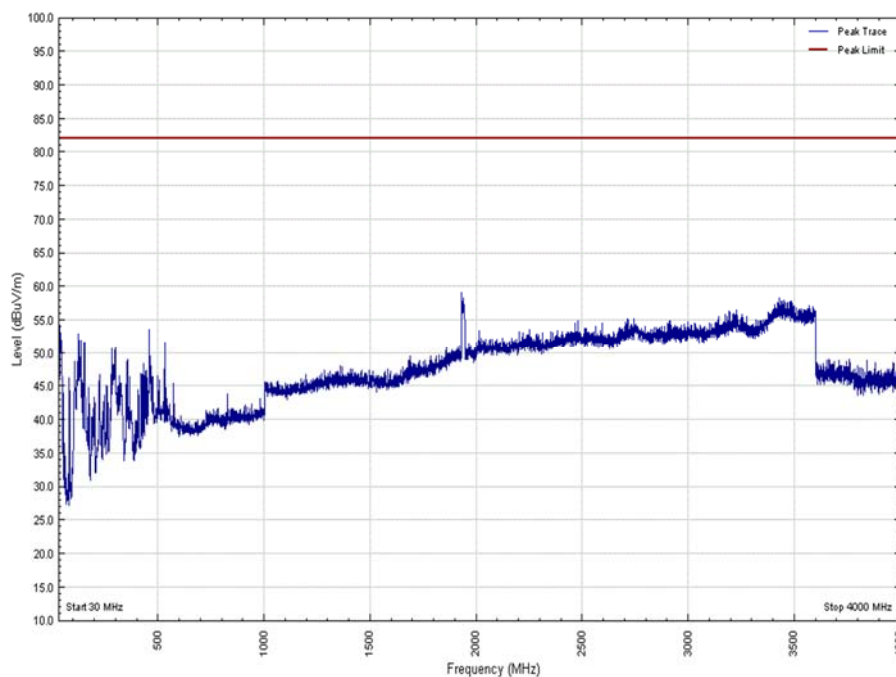
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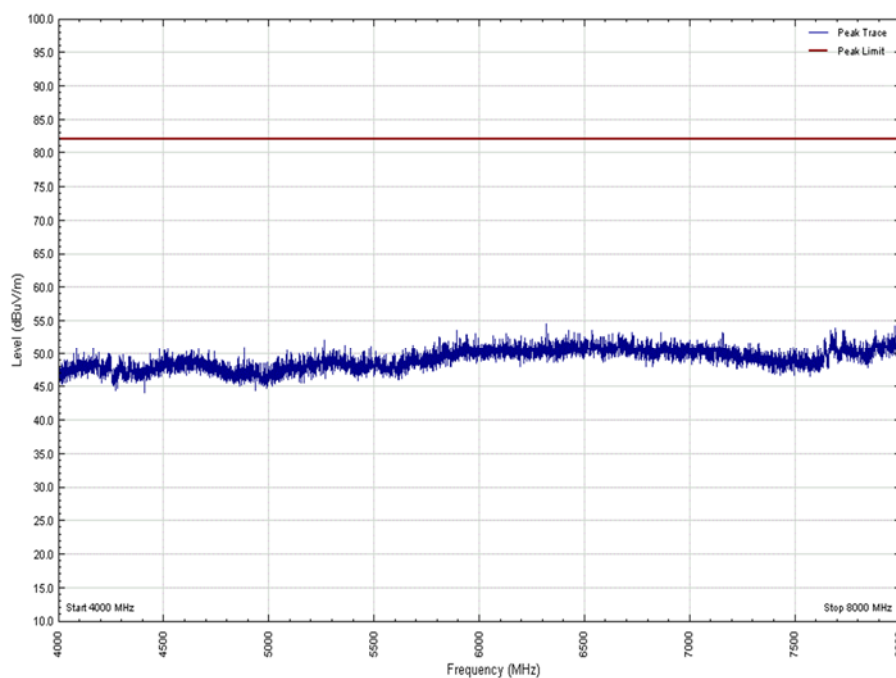
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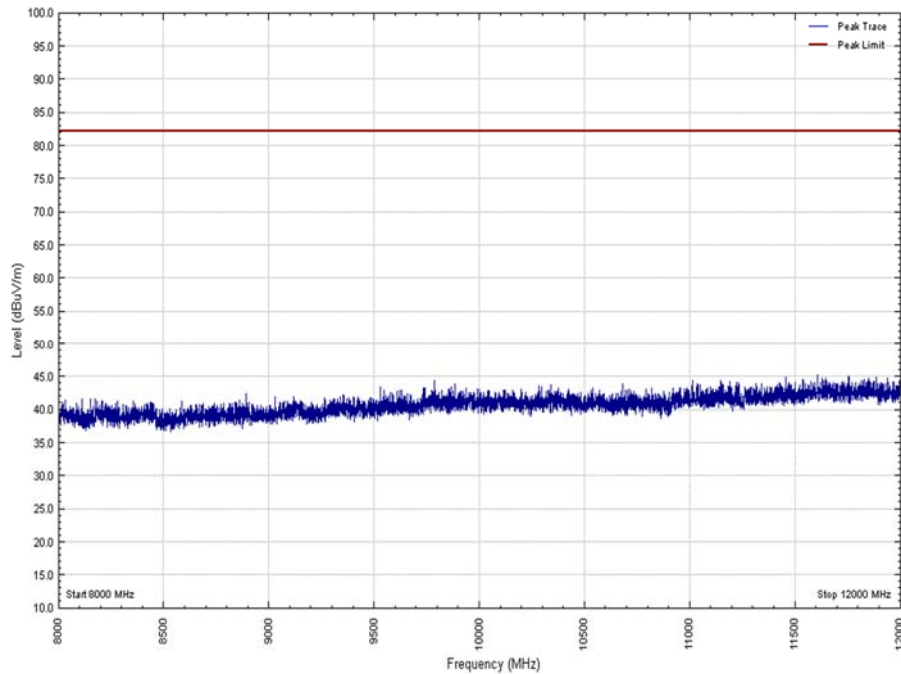
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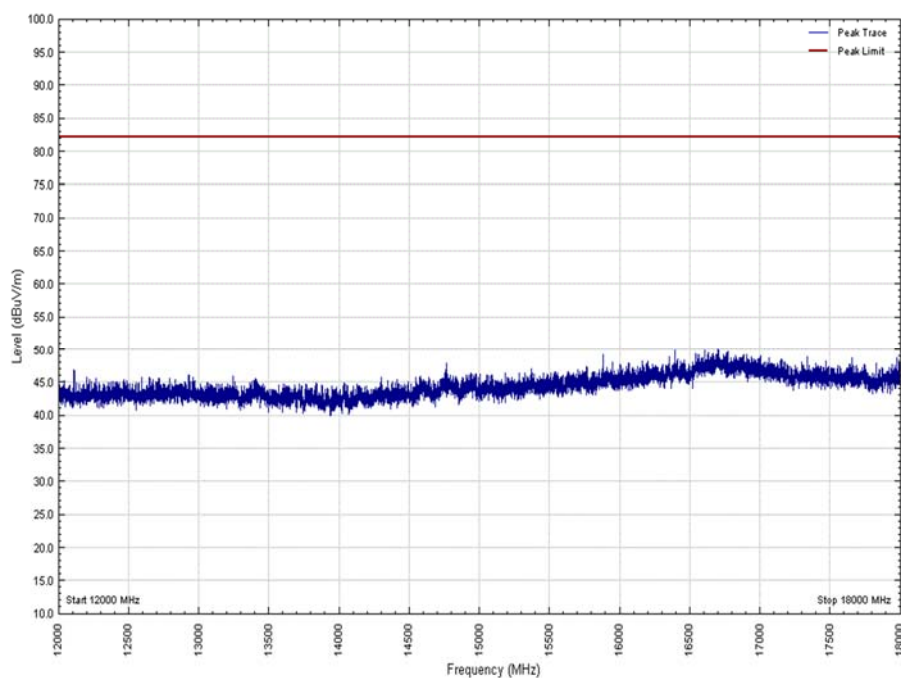
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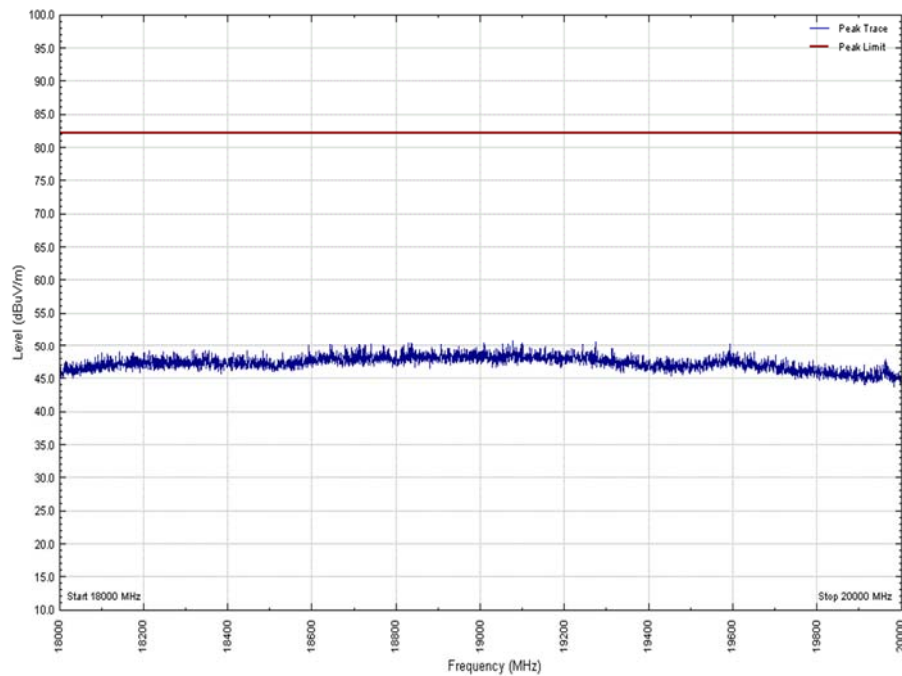
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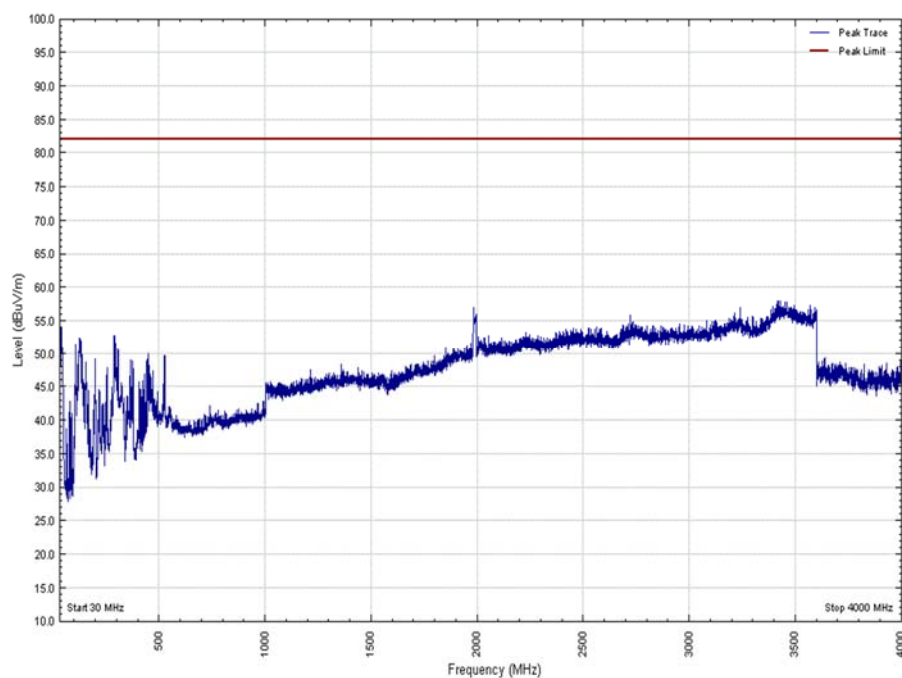
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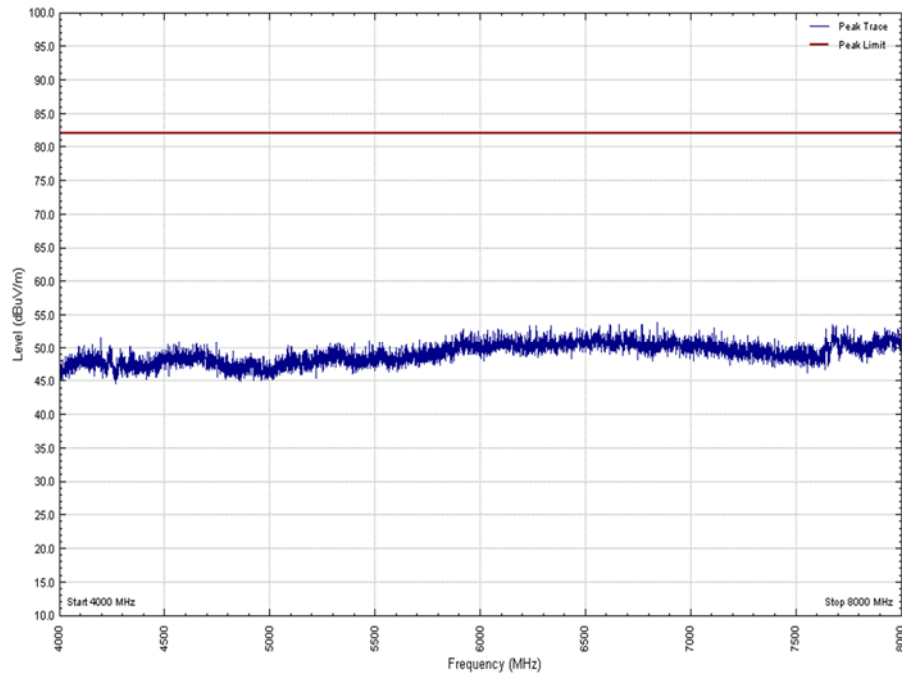
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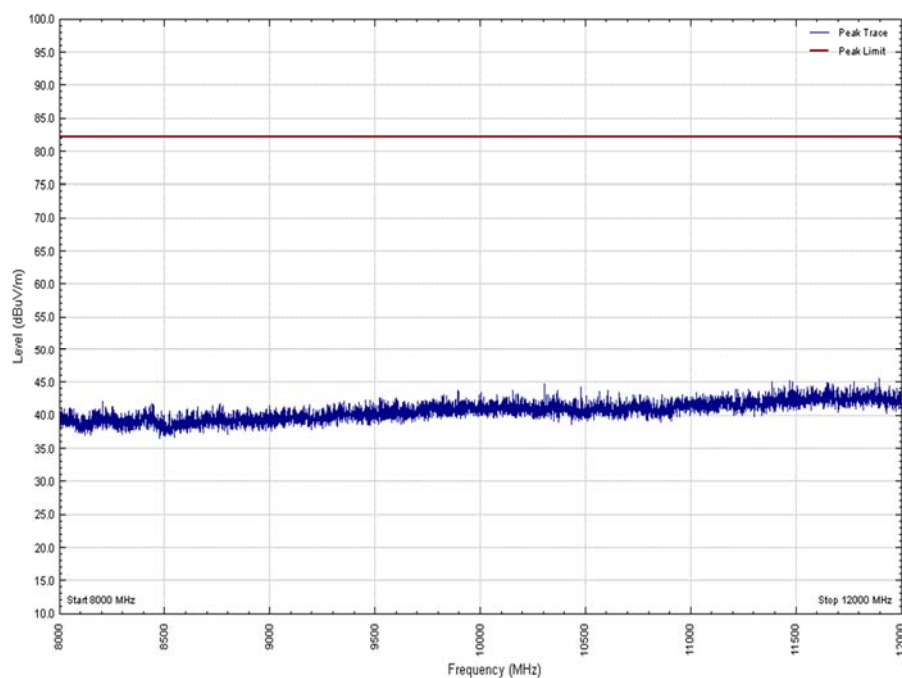
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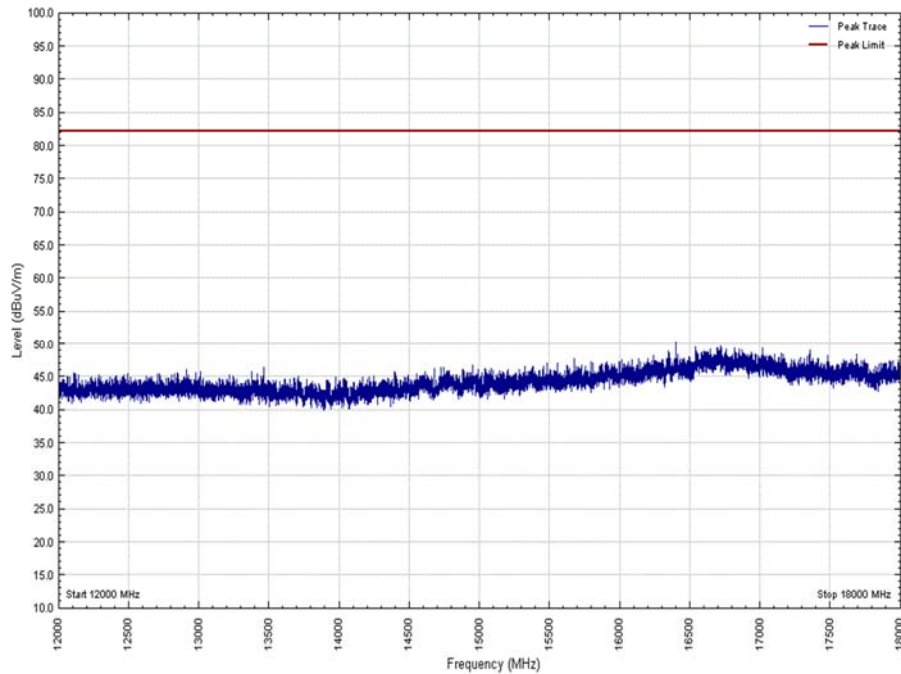
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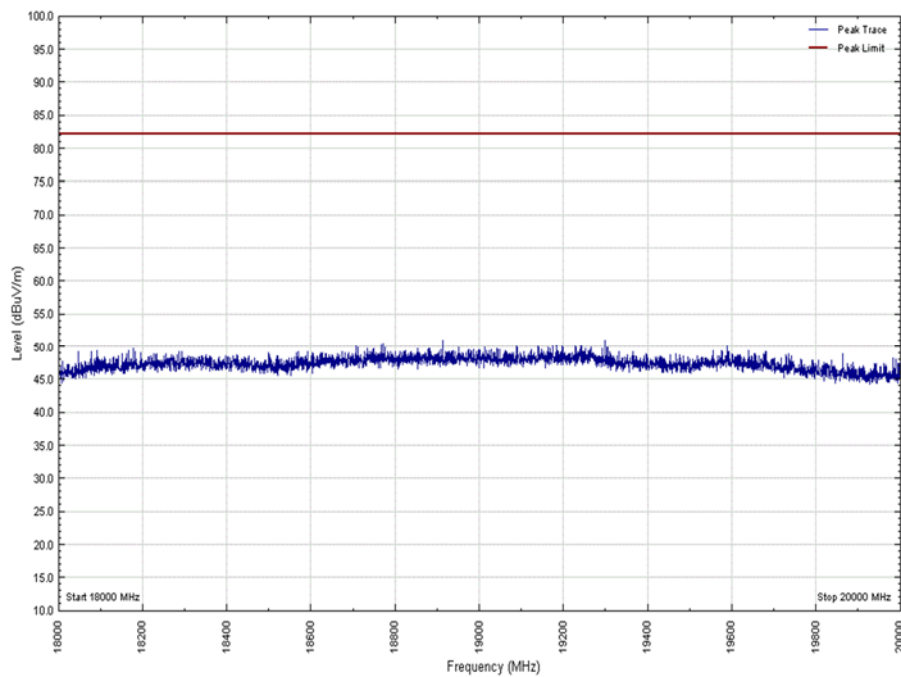
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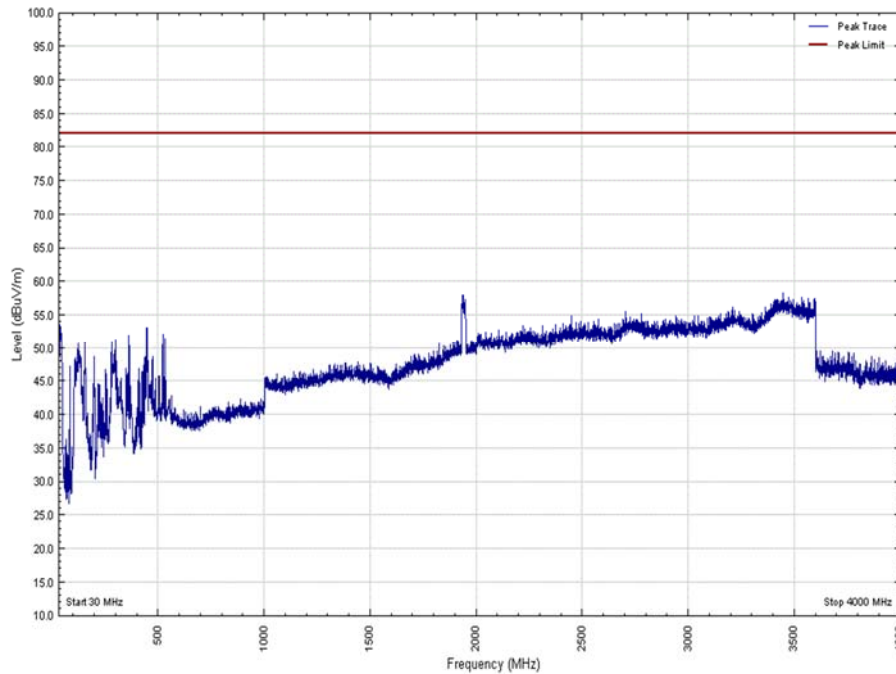
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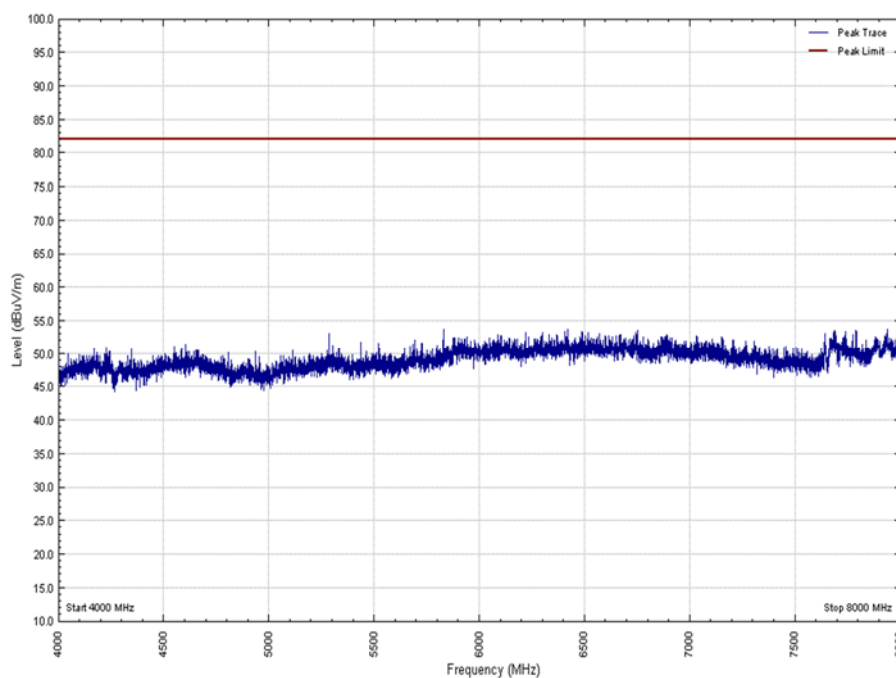
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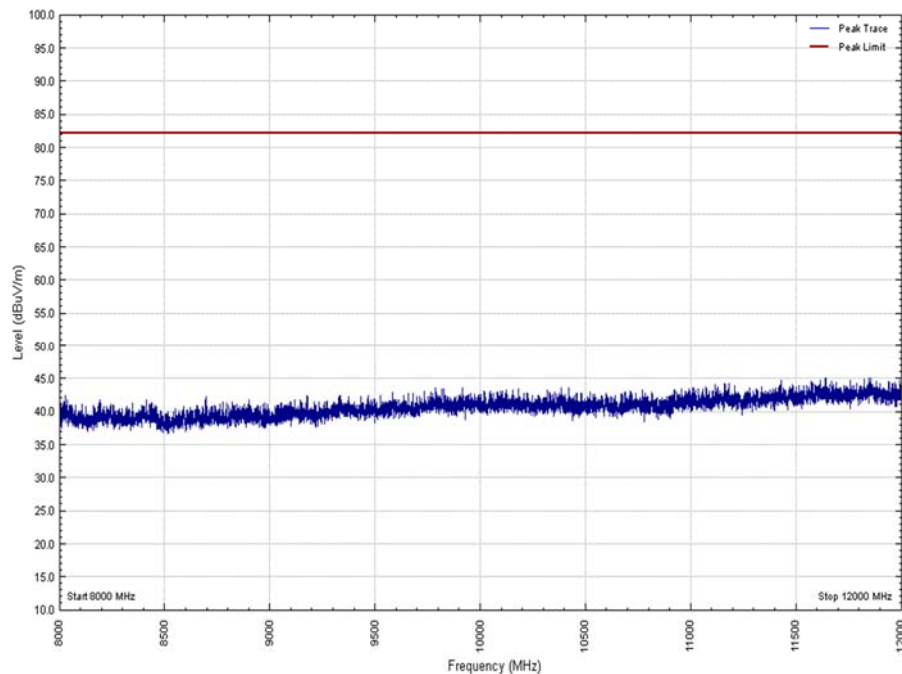
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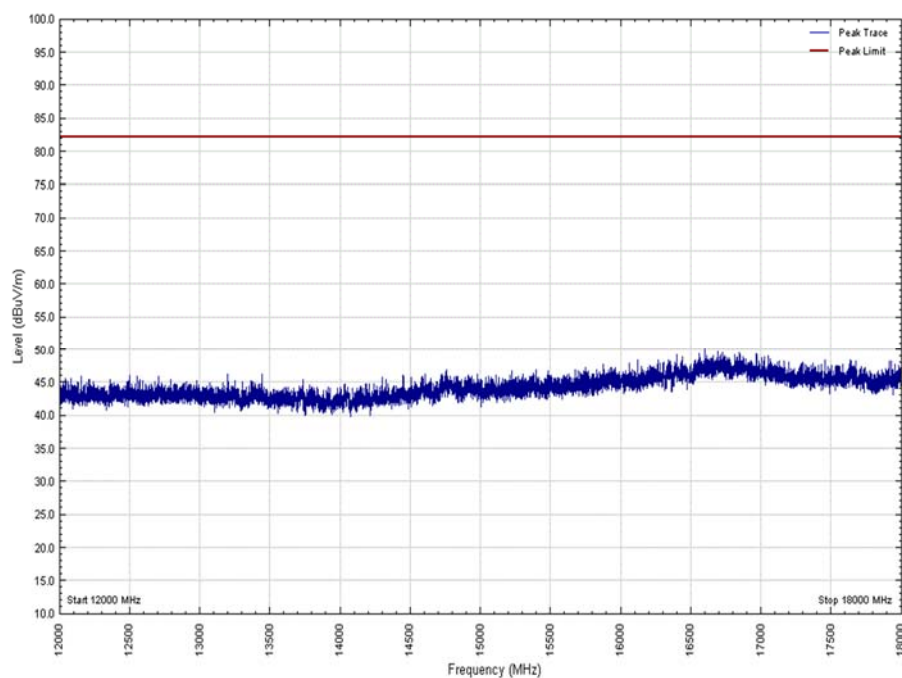
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Carrier Bandwidth E:20.0 MHz / N:180 kHz - Channel Position BRFBW - Band 2 - Range 4000
to 8000 MHz - Vertical



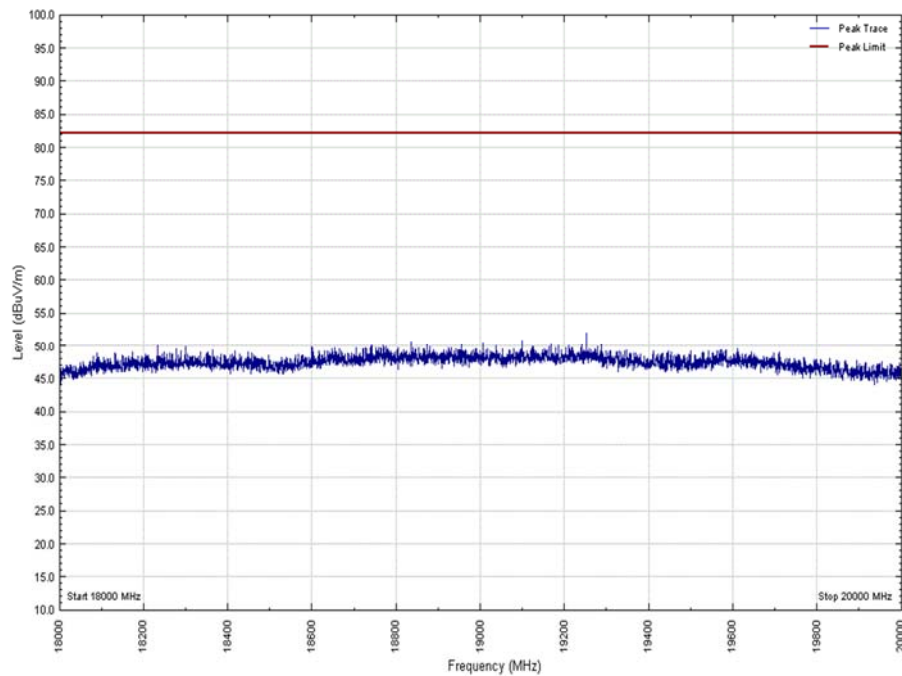
Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB
Carrier Bandwidth E:20.0 MHz / N:180 kHz - Channel Position BRFBW - Band 3 - Range 8000
to 12000 MHz - Vertical



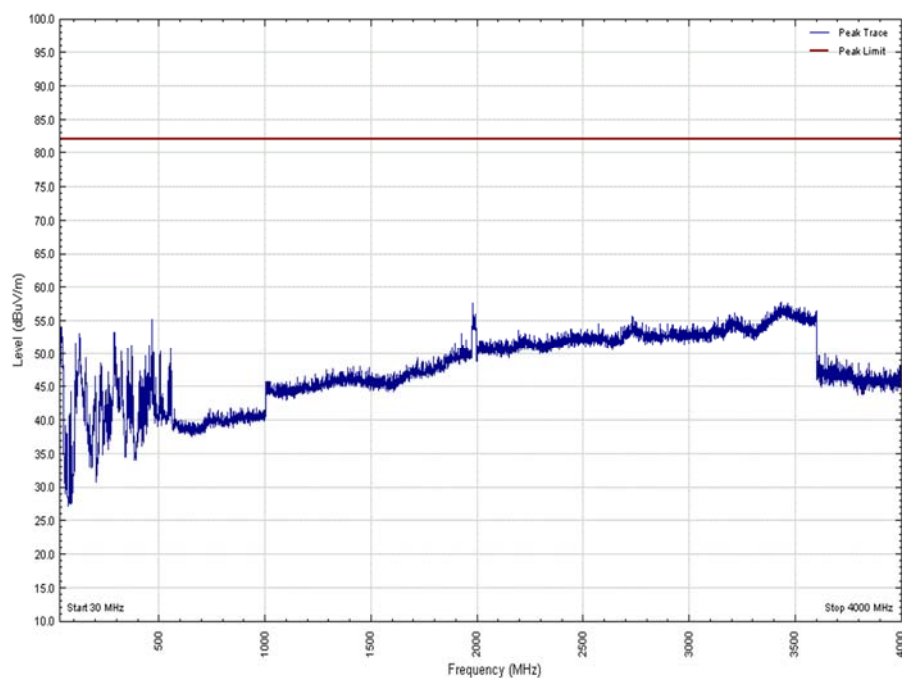
Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB
Carrier Bandwidth E:20.0 MHz / N:180 kHz - Channel Position BRFBW - Band 4 - Range 12000
to 18000 MHz - Vertical



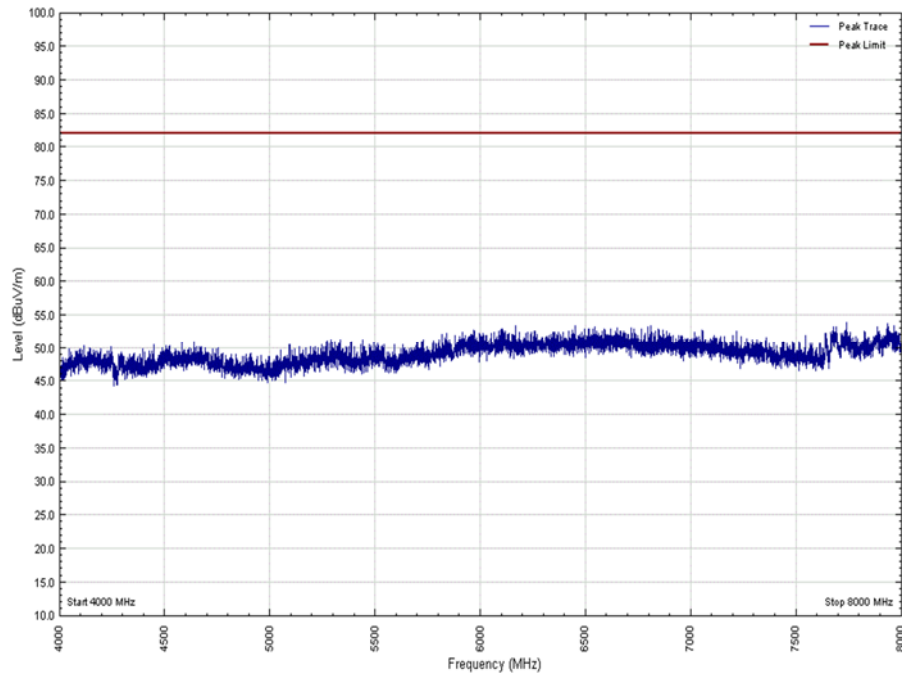
Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB
Carrier Bandwidth E:20.0 MHz / N:180 kHz - Channel Position BRFBW - Band 5 - Range 18000
to 20000 MHz - Vertical



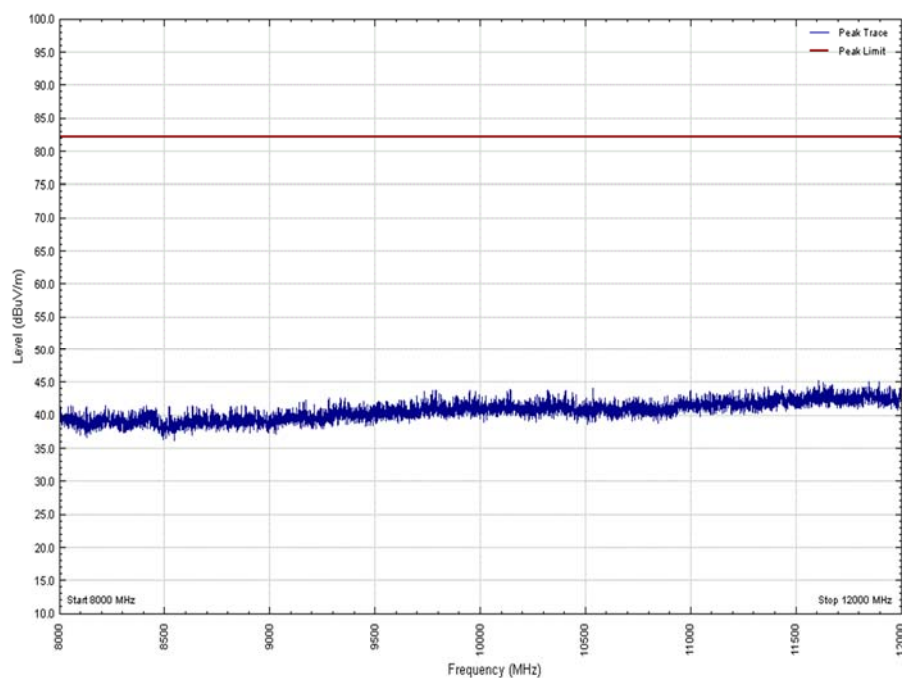
Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB
Carrier Bandwidth E:20.0 MHz / N:180 kHz - Channel Position TRFBW - Band 1 - Range 30 to
4000 MHz - Vertical



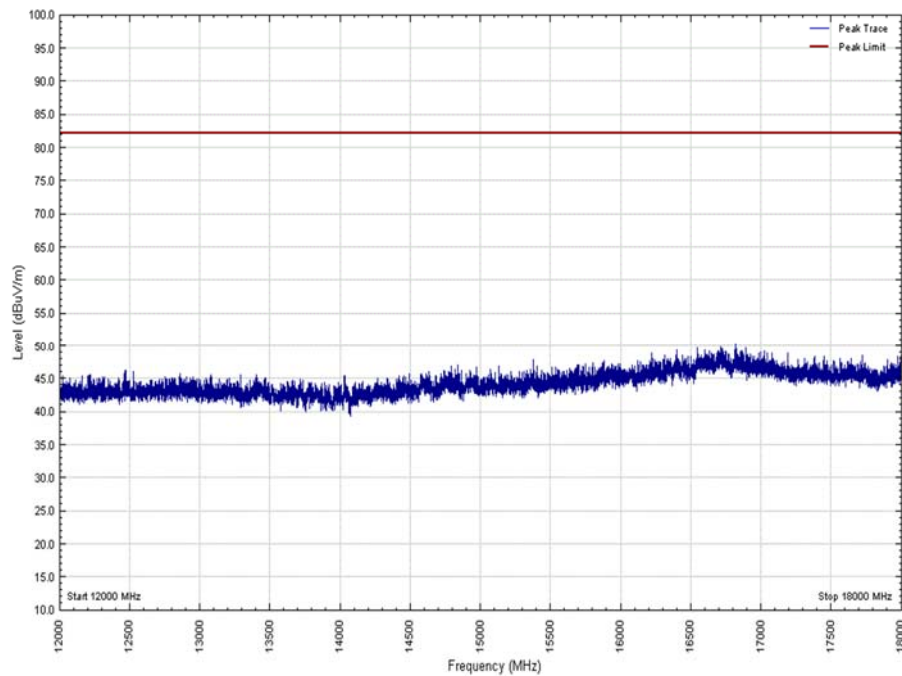
Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB
Carrier Bandwidth E:20.0 MHz / N:180 kHz - Channel Position TRFBW - Band 2 - Range 4000
to 8000 MHz - Vertical



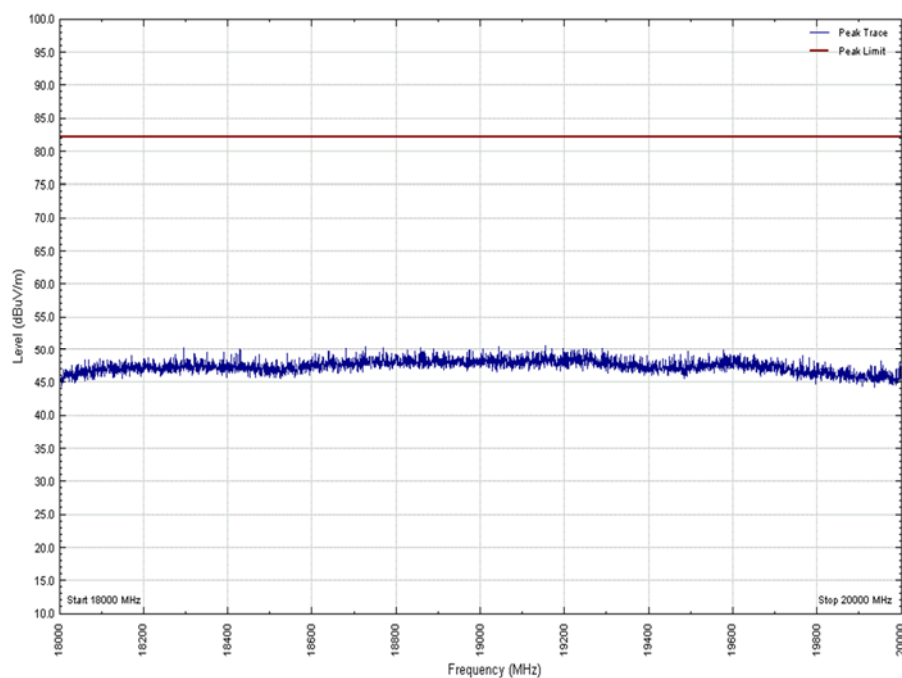
Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB
Carrier Bandwidth E:20.0 MHz / N:180 kHz - Channel Position TRFBW - Band 3 - Range 8000
to 12000 MHz - Vertical



Antenna A - E-UTRA / NB-IoT GB Modulation E:64QAM / N:QPSK - E-UTRA / NB-IoT GB
Carrier Bandwidth E:20.0 MHz / N:180 kHz - Channel Position TRFBW - Band 4 - Range 12000
to 18000 MHz - Vertical



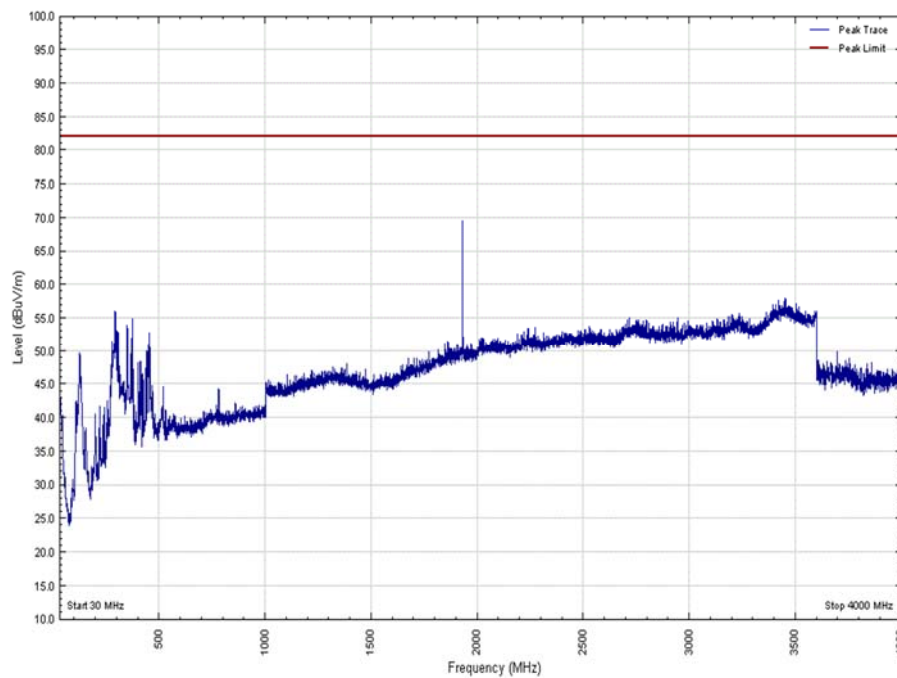
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Carrier Bandwidth E:20.0 MHz / N:180 kHz - Channel Position TRFBW - Band 5 - Range 18000
to 20000 MHz - Vertical



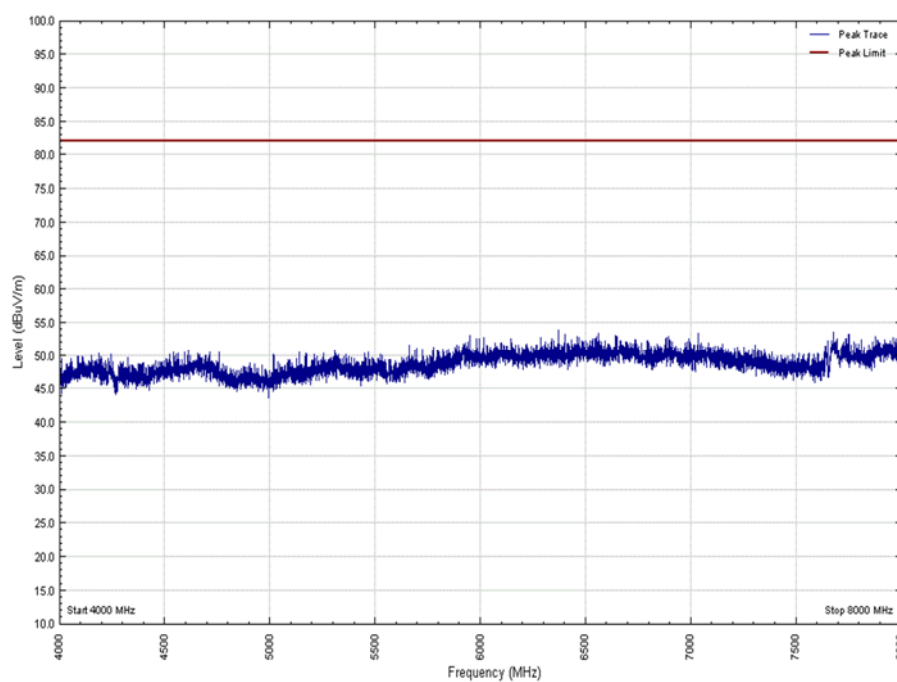
Configuration B

Maximum Output Power 37 dBm

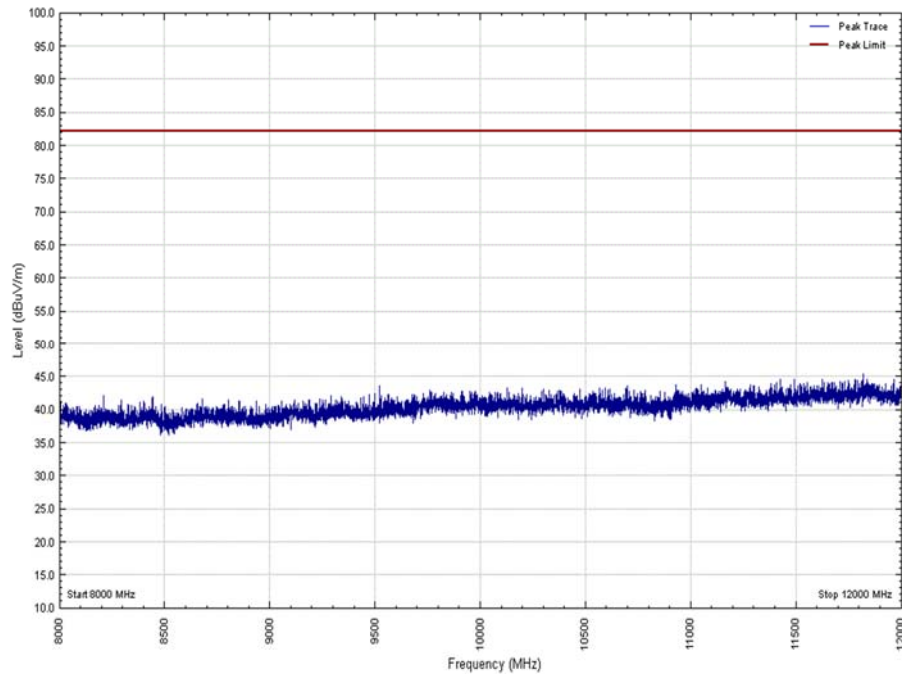
Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz -
Channel Position B - Band 1 - Range 30 to 4000 MHz - Horizontal



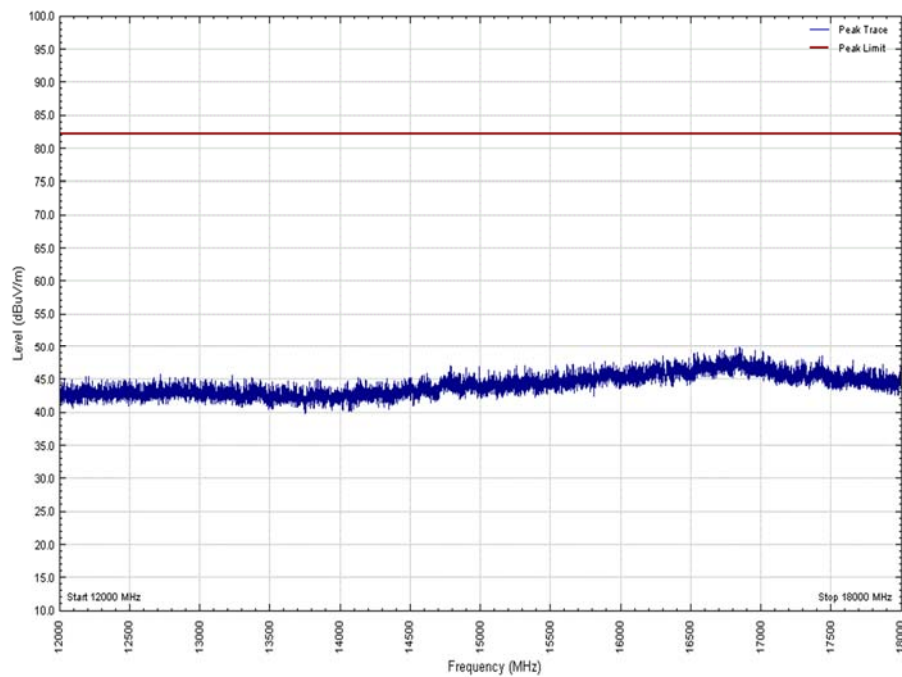
Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz -
Channel Position B - Band 2 - Range 4000 to 8000 MHz - Horizontal



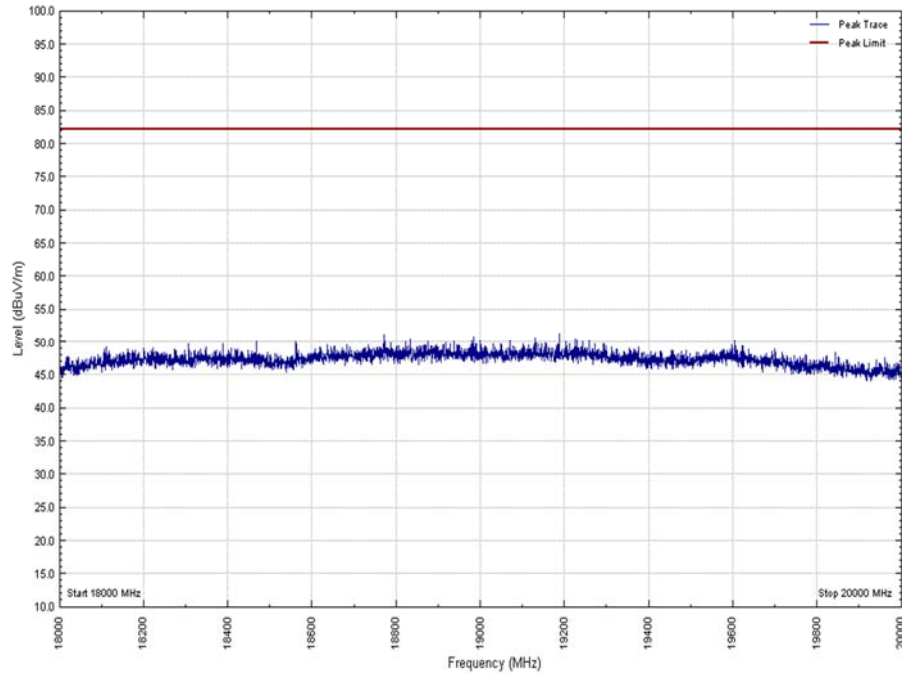
Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz -
Channel Position B - Band 3 - Range 8000 to 12000 MHz - Horizontal



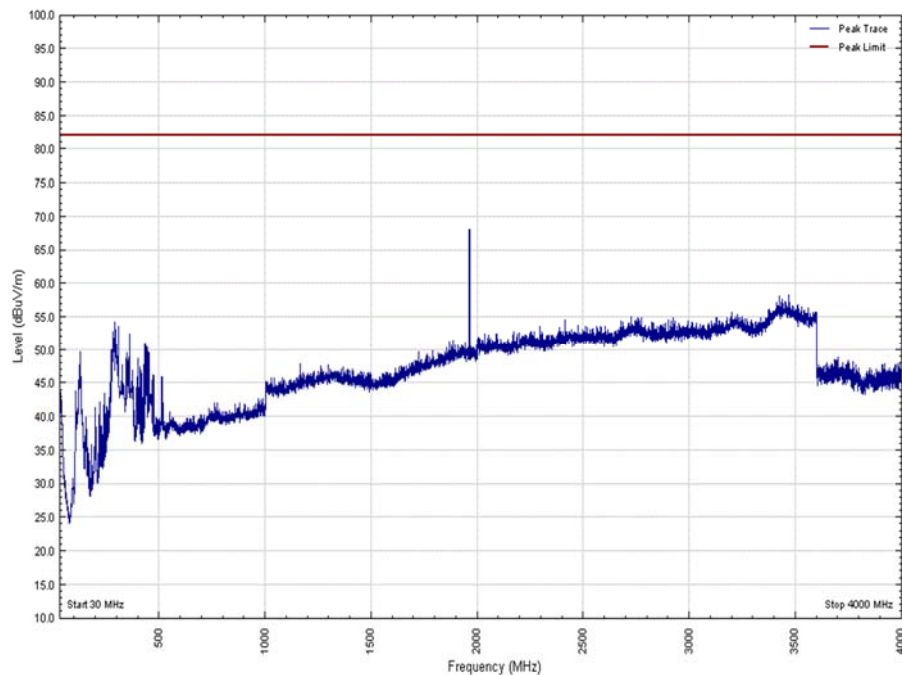
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Channel Position B - Band 4 - Range 12000 to 18000 MHz - Horizontal



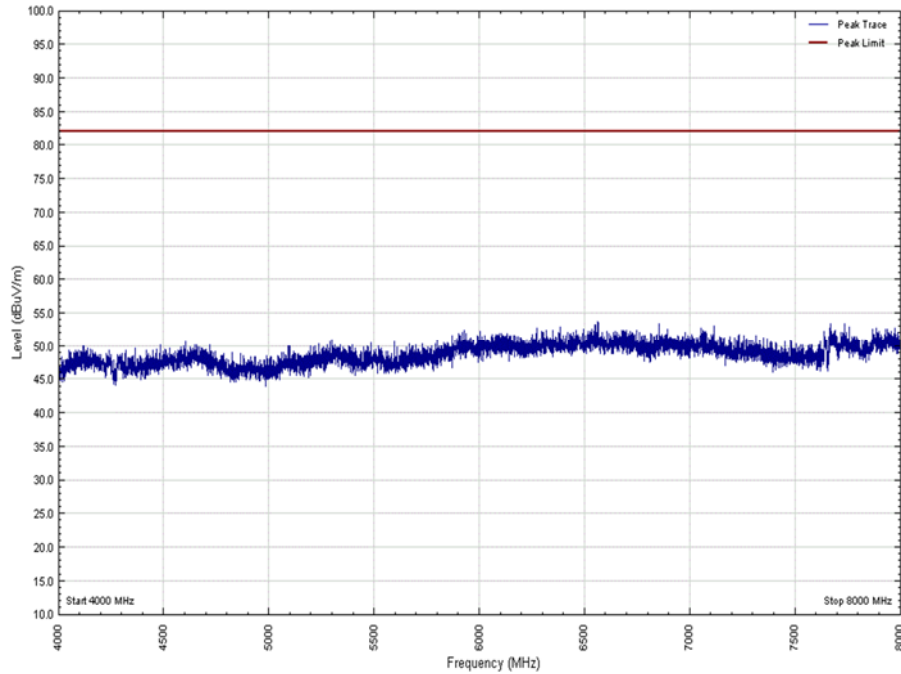
Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz -
Channel Position B - Band 5 - Range 18000 to 20000 MHz - Horizontal



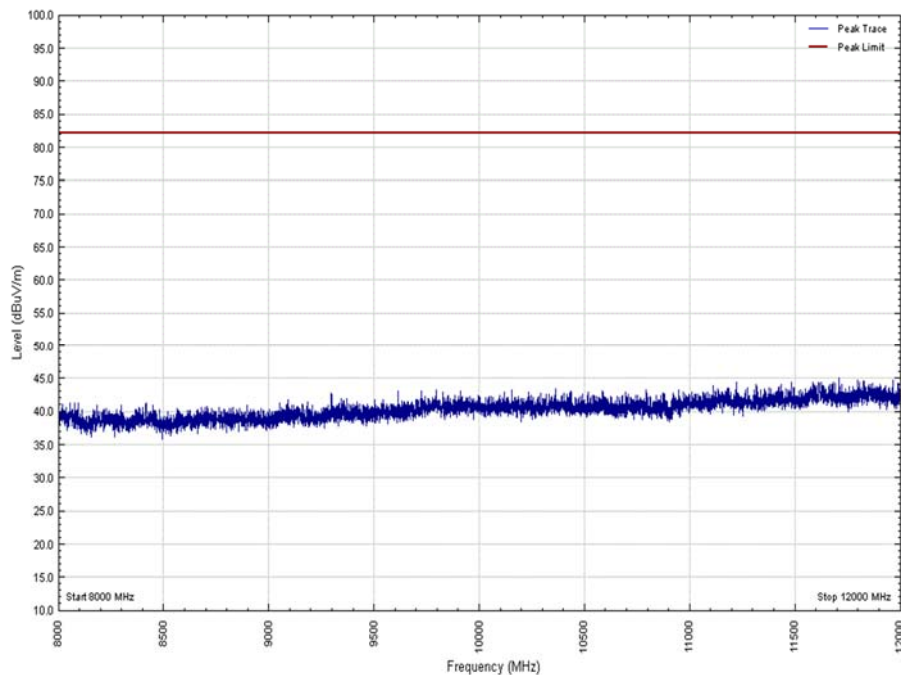
Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz -
Channel Position M - Band 1 - Range 30 to 4000 MHz - Horizontal



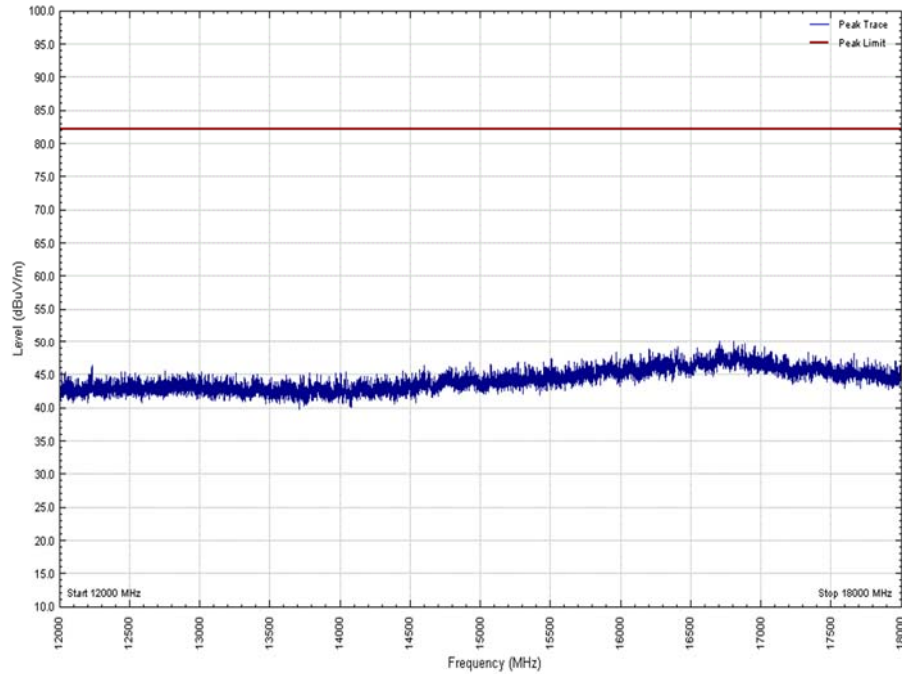
Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz -
Channel Position M - Band 2 - Range 4000 to 8000 MHz - Horizontal



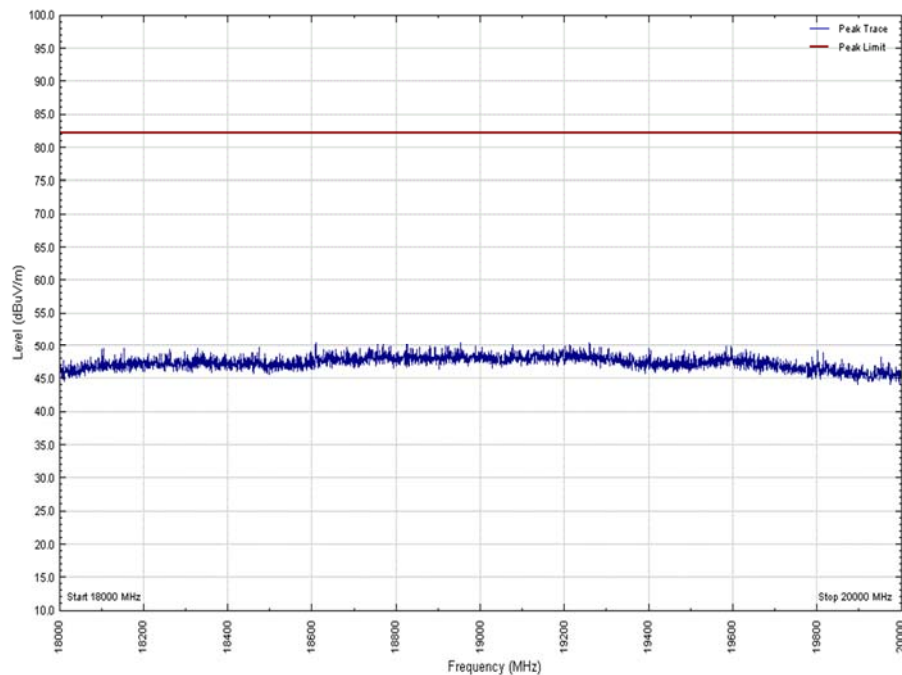
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Channel Position M - Band 3 - Range 8000 to 12000 MHz - Horizontal



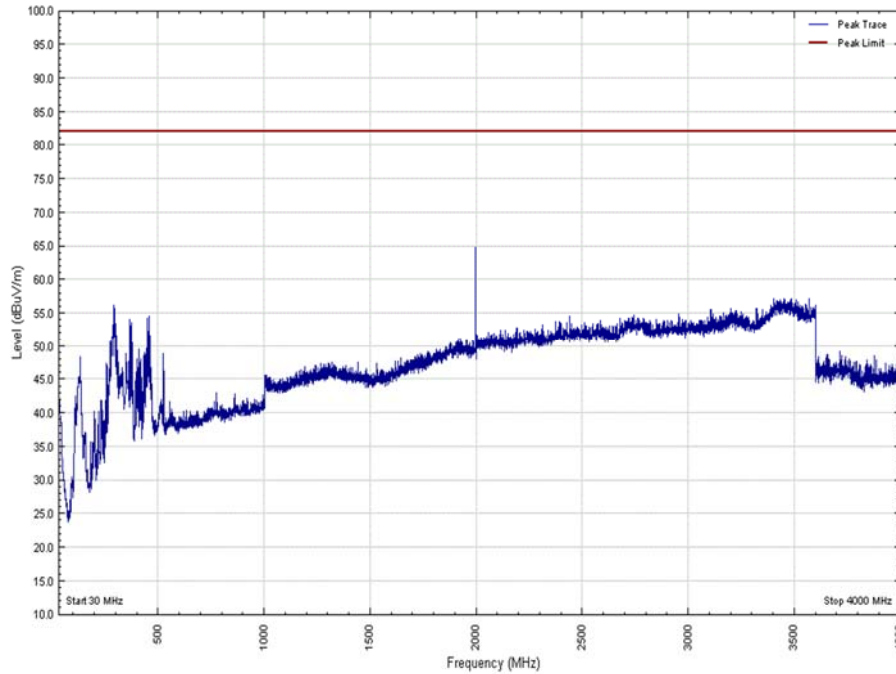
Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz -
Channel Position M - Band 4 - Range 12000 to 18000 MHz - Horizontal



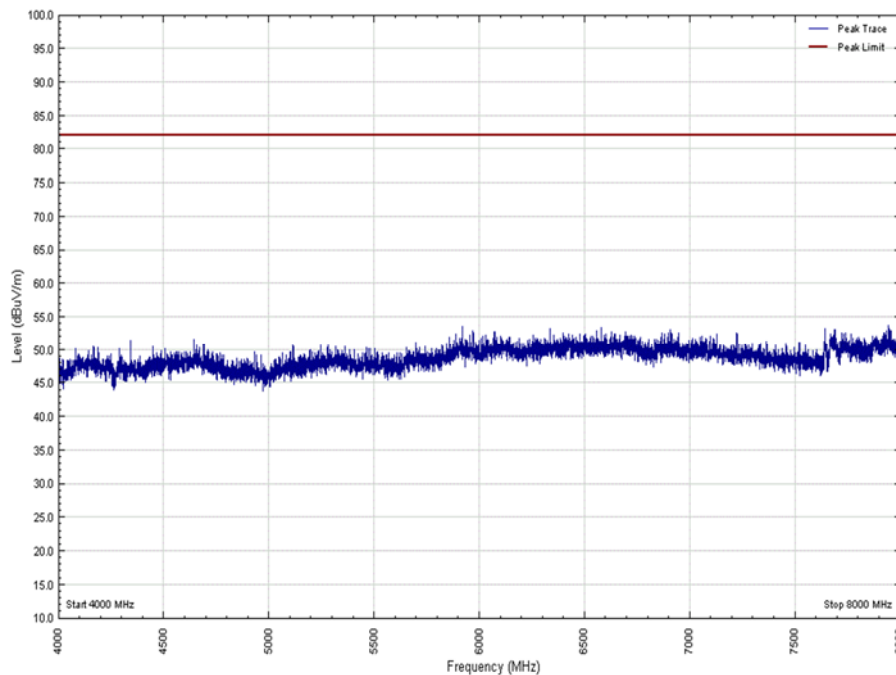
Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz -
Channel Position M - Band 5 - Range 18000 to 20000 MHz - Horizontal



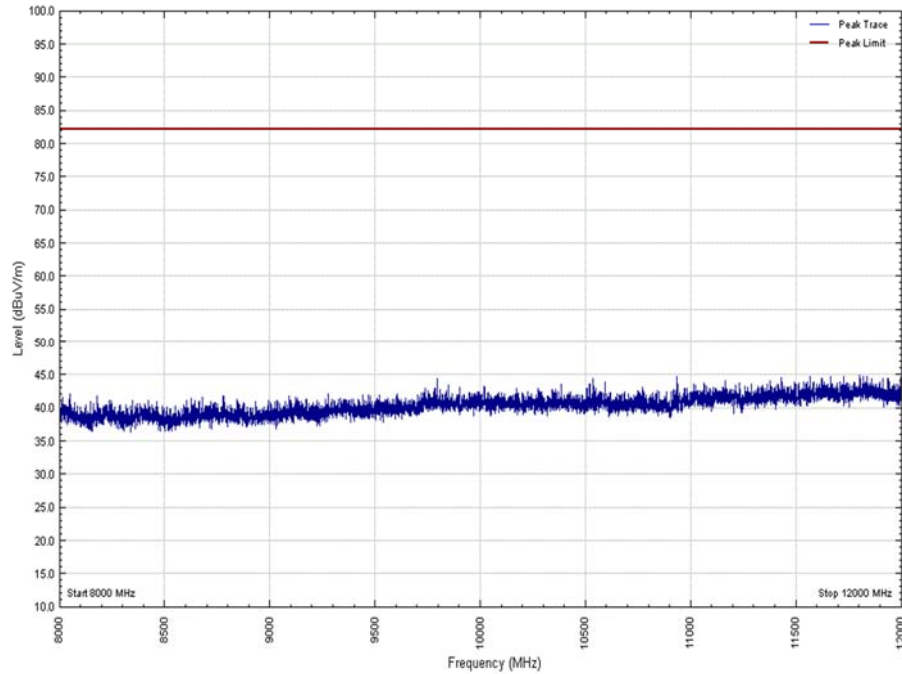
Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz -
Channel Position T - Band 1 - Range 30 to 4000 MHz - Horizontal



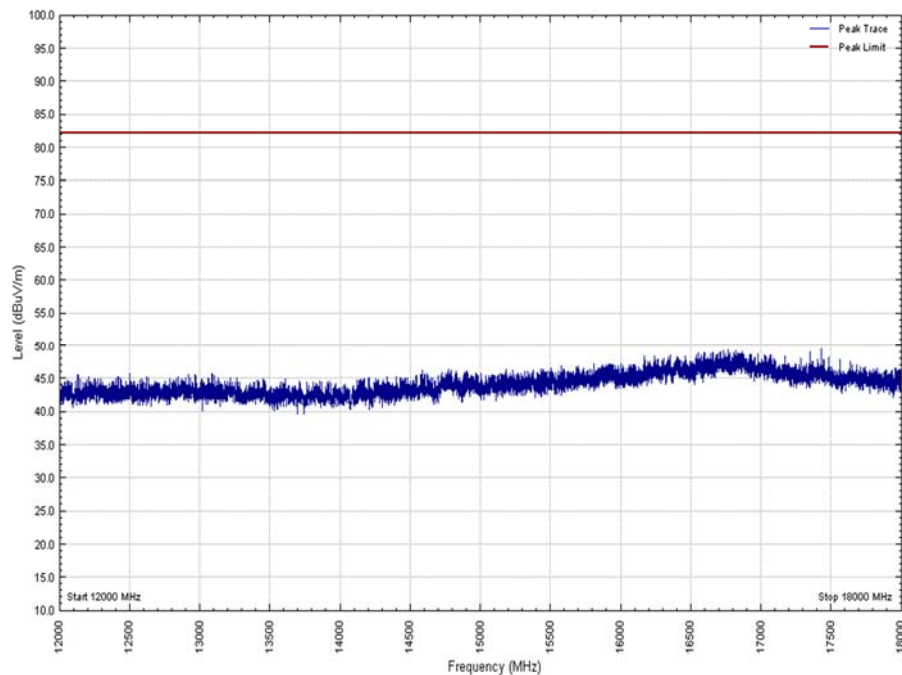
Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz -
Channel Position T - Band 2 - Range 4000 to 8000 MHz - Horizontal



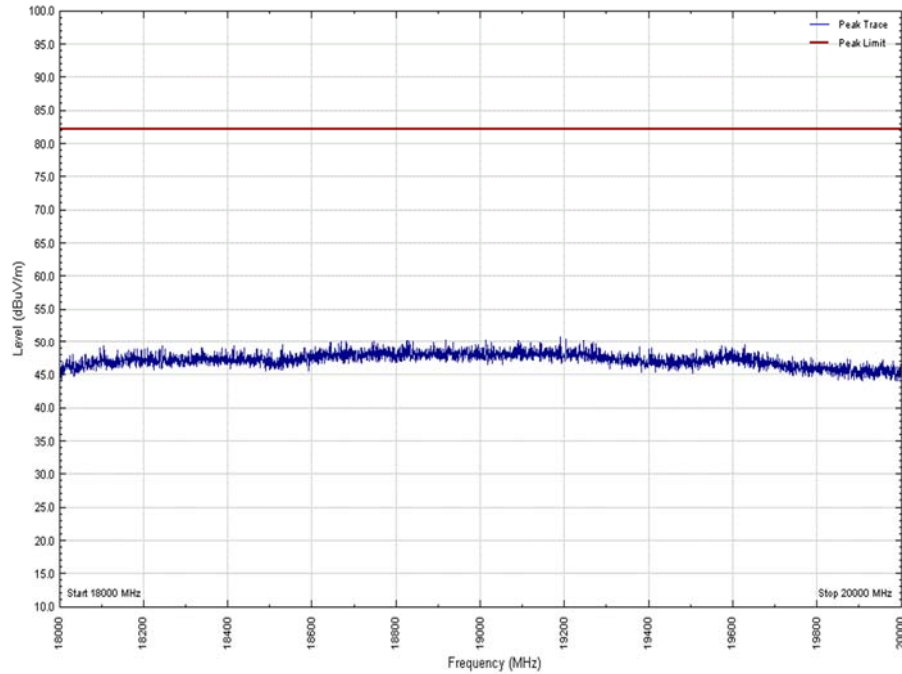
Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz -
Channel Position T - Band 3 - Range 8000 to 12000 MHz - Horizontal



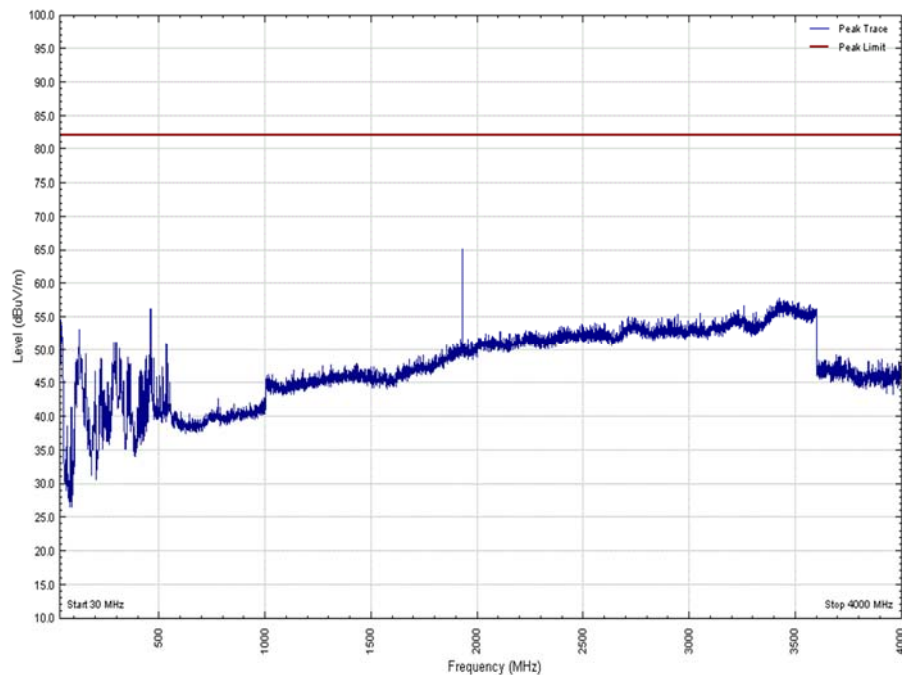
Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz -
Channel Position T - Band 4 - Range 12000 to 18000 MHz - Horizontal



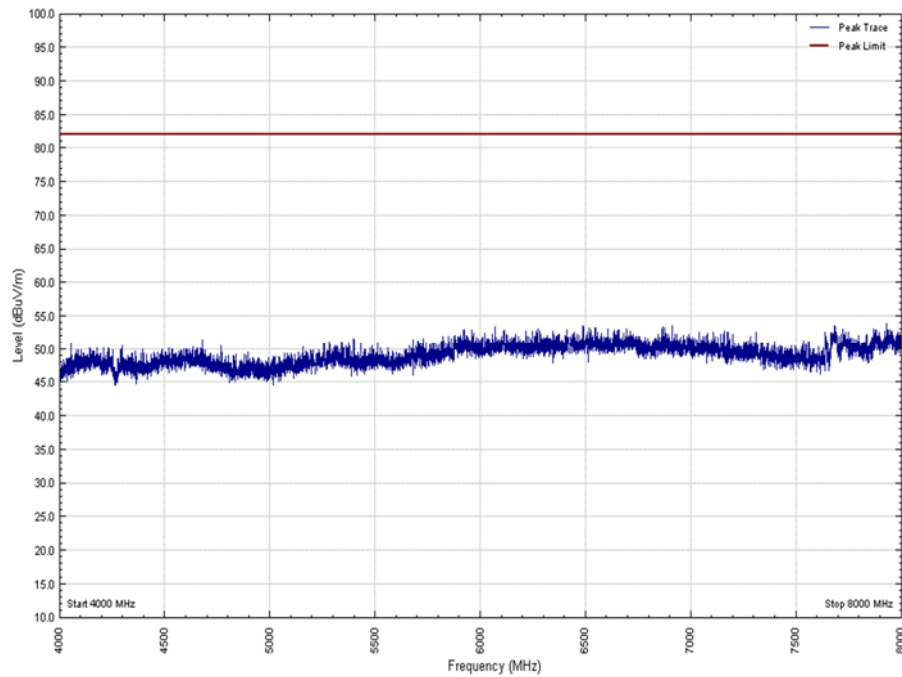
Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz -
Channel Position T - Band 5 - Range 18000 to 20000 MHz - Horizontal



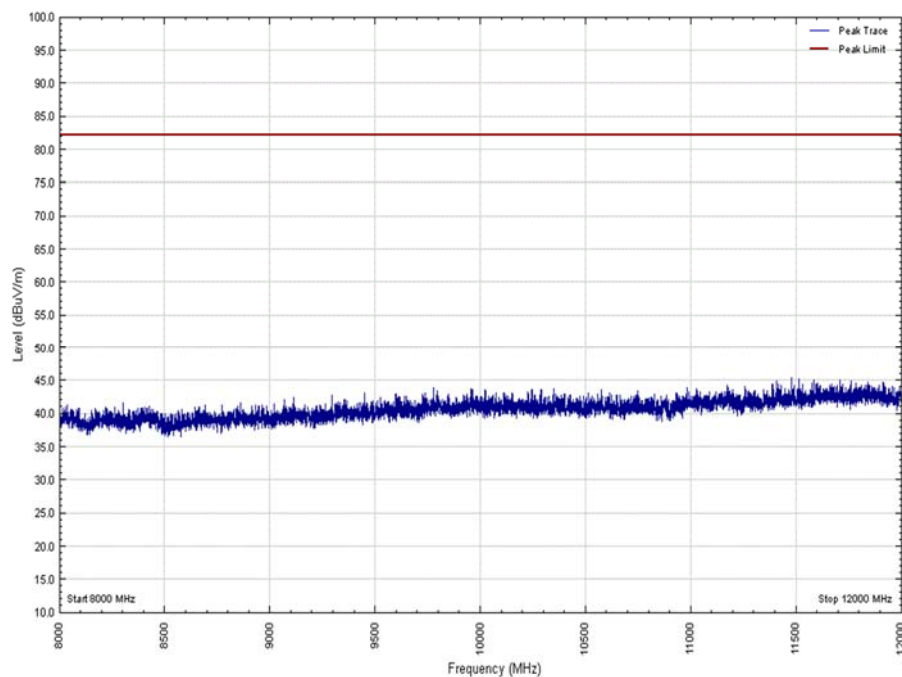
Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz -
Channel Position B - Band 1 - Range 30 to 4000 MHz - Vertical



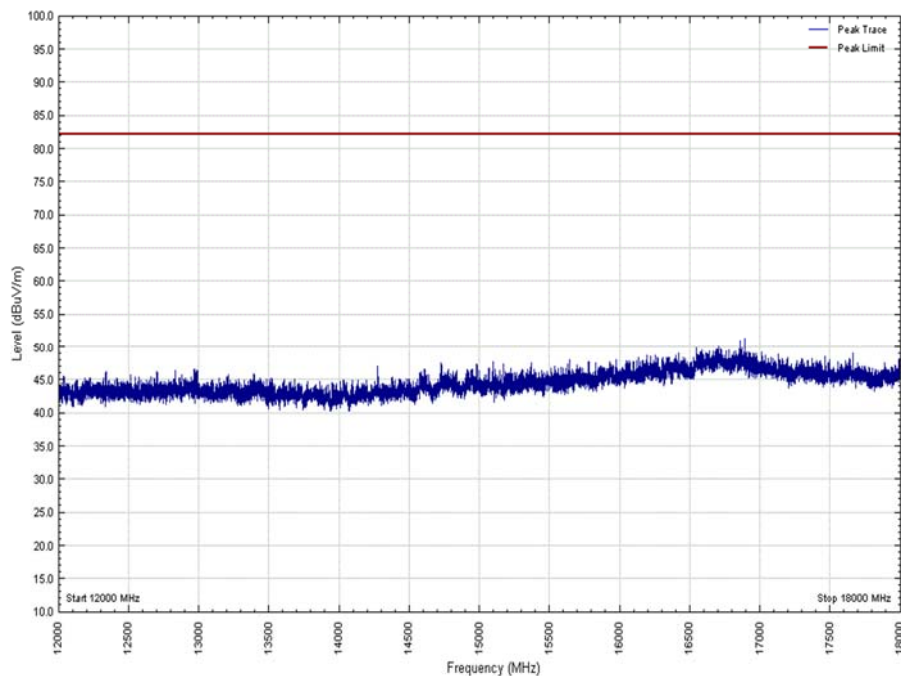
Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz -
Channel Position B - Band 2 - Range 4000 to 8000 MHz - Vertical



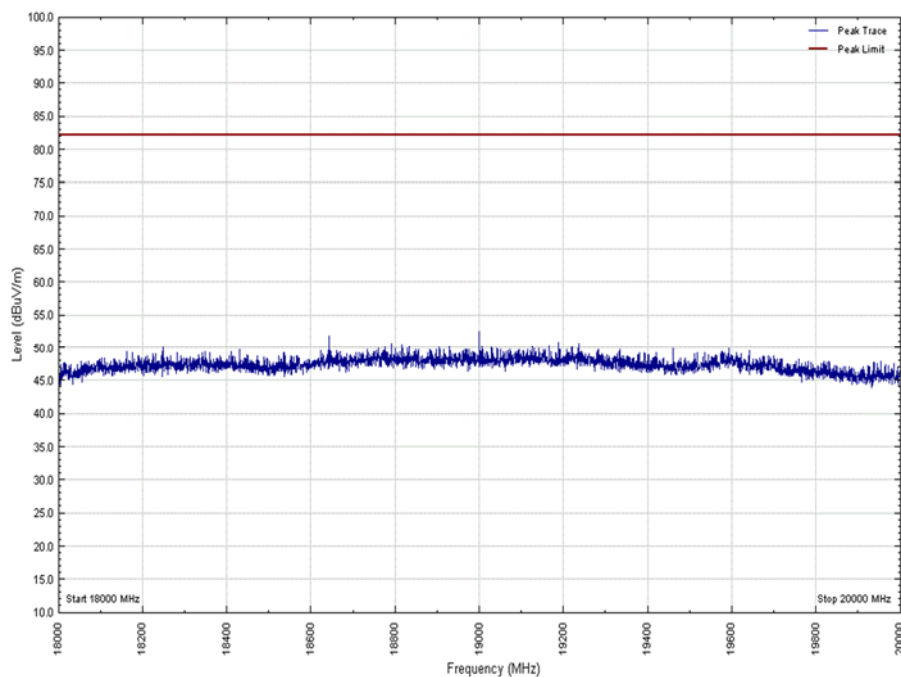
Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz -
Channel Position B - Band 3 - Range 8000 to 12000 MHz - Vertical



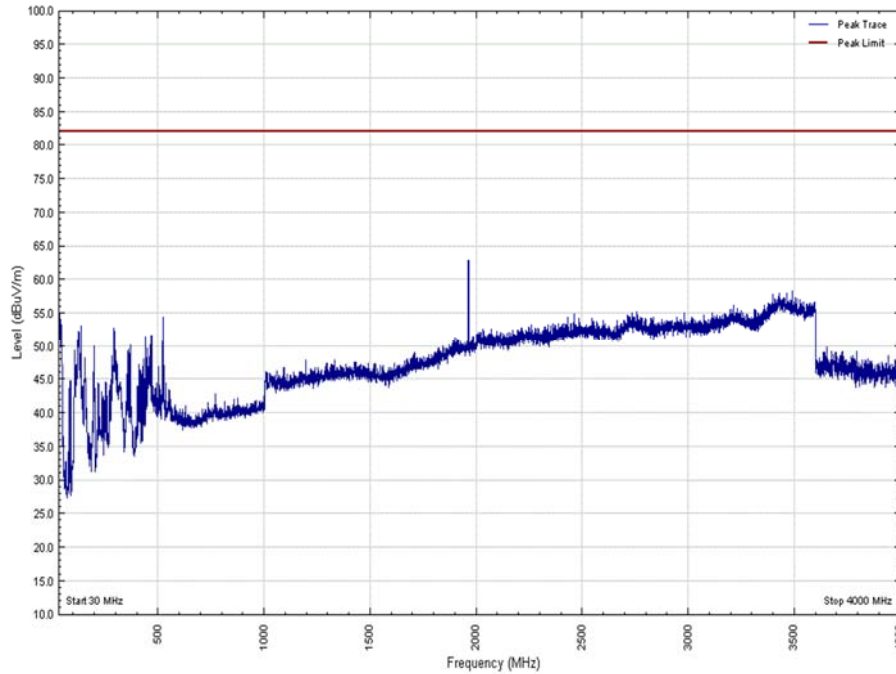
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Channel Position B - Band 4 - Range 12000 to 18000 MHz - Vertical



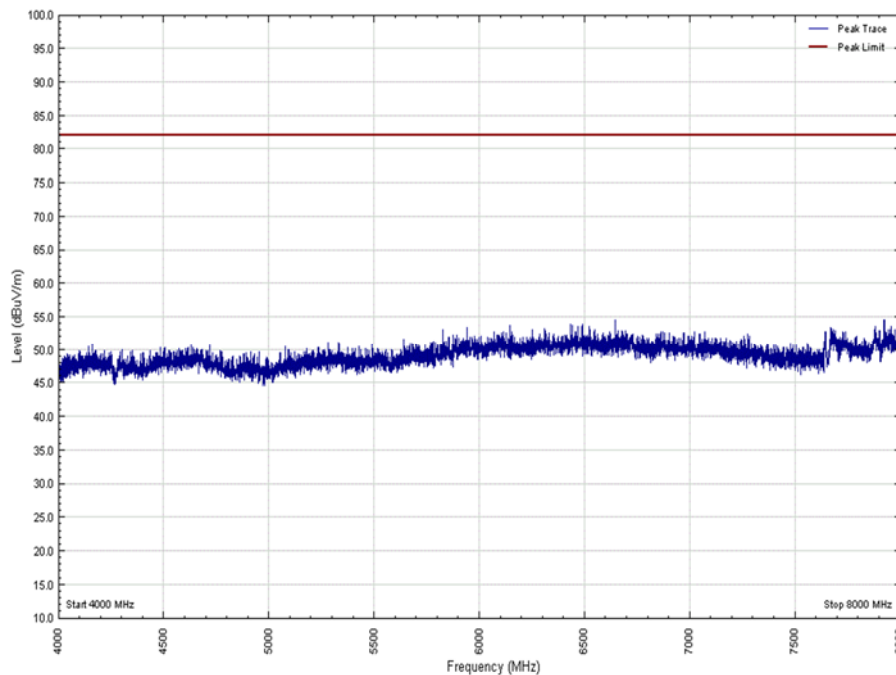
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Channel Position B - Band 5 - Range 18000 to 20000 MHz - Vertical



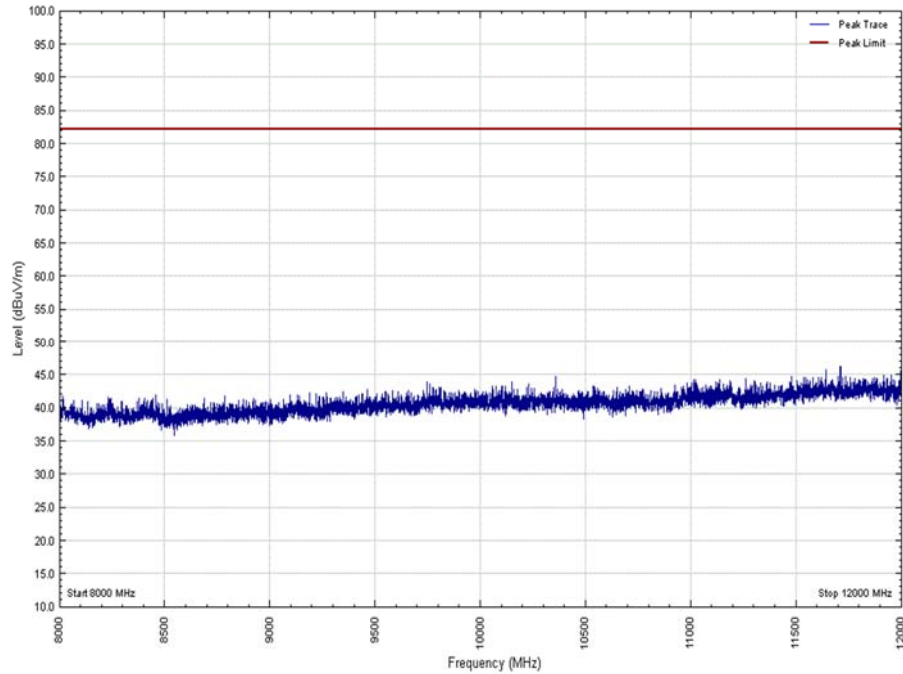
Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz -
Channel Position M - Band 1 - Range 30 to 4000 MHz - Vertical



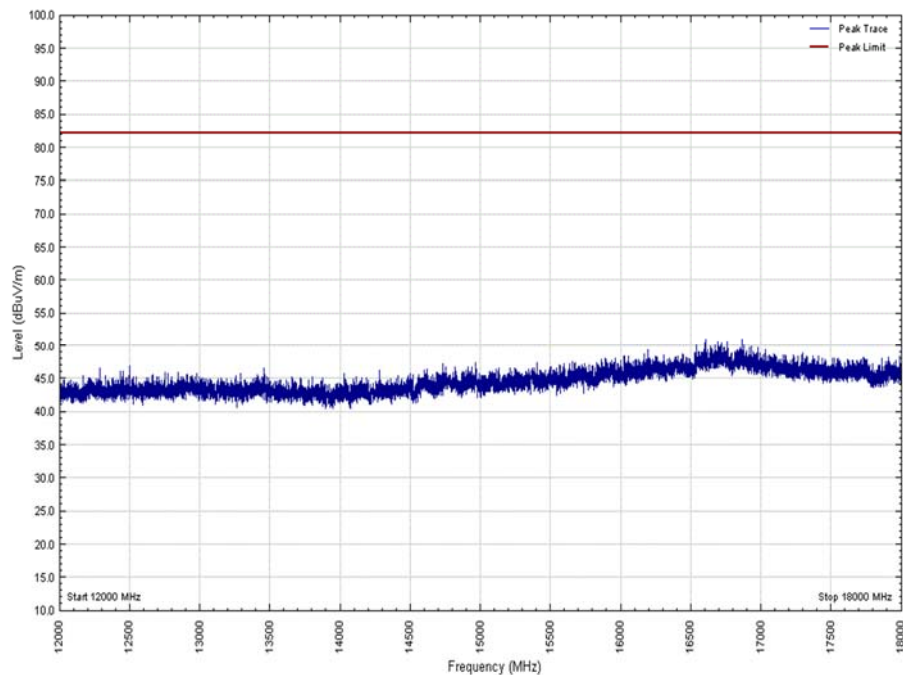
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Channel Position M - Band 2 - Range 4000 to 8000 MHz - Vertical



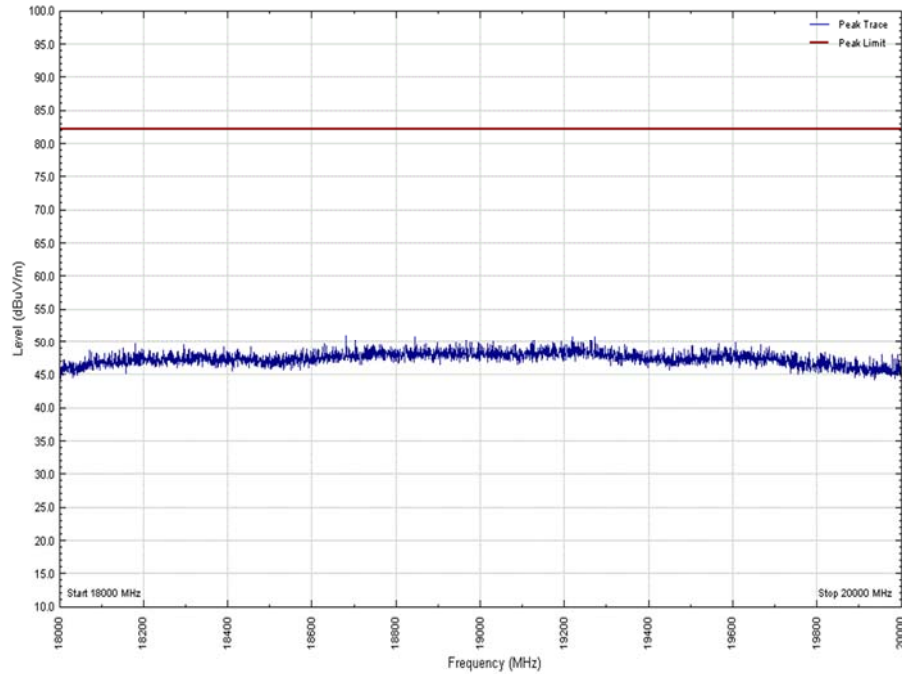
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Channel Position M - Band 3 - Range 8000 to 12000 MHz - Vertical



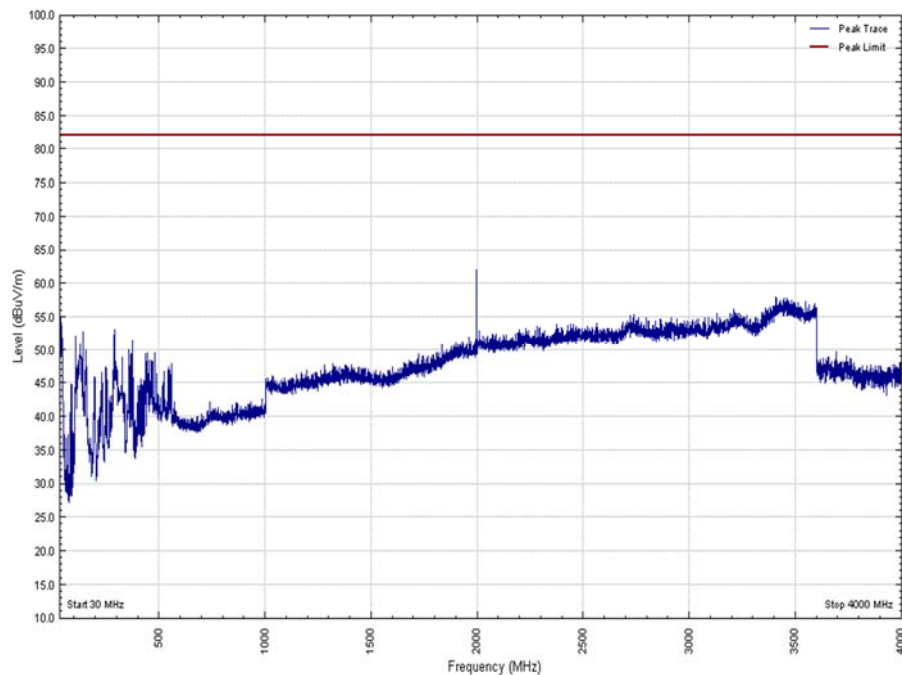
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Channel Position M - Band 4 - Range 12000 to 18000 MHz - Vertical



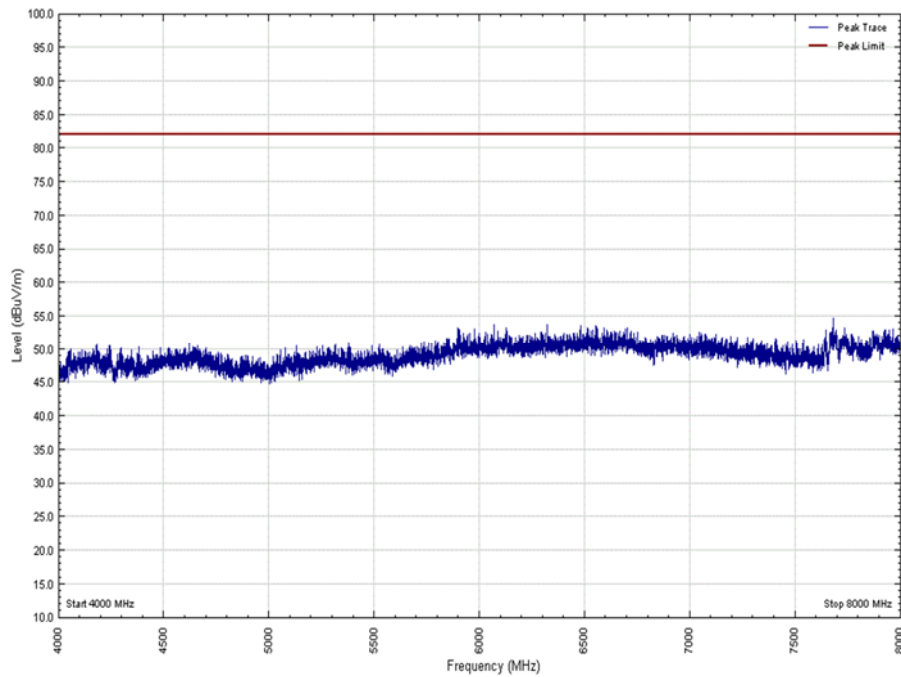
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Channel Position M - Band 5 - Range 18000 to 20000 MHz - Vertical



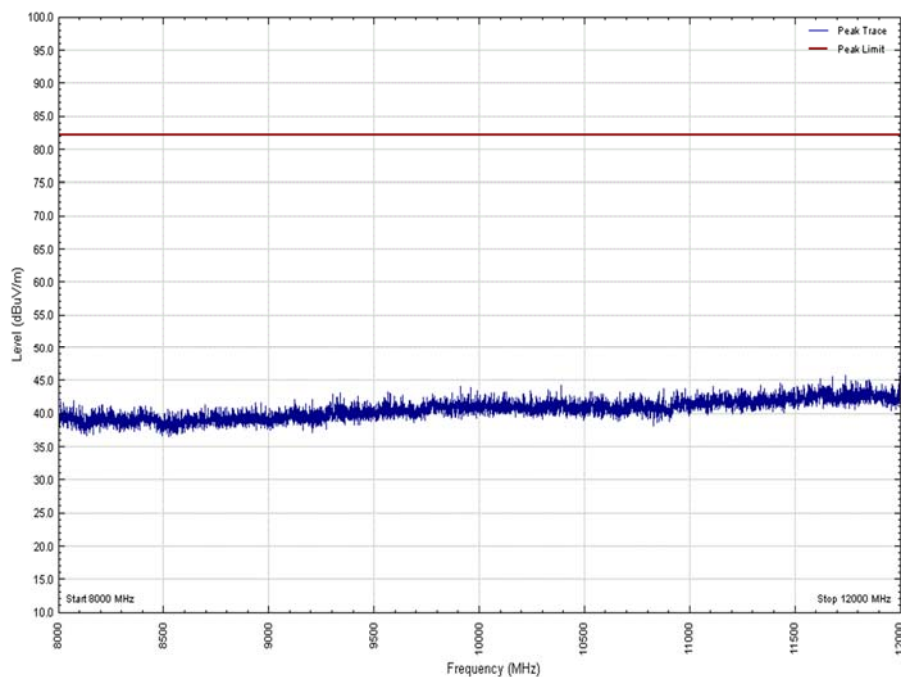
Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz -
Channel Position T - Band 1 - Range 30 to 4000 MHz - Vertical



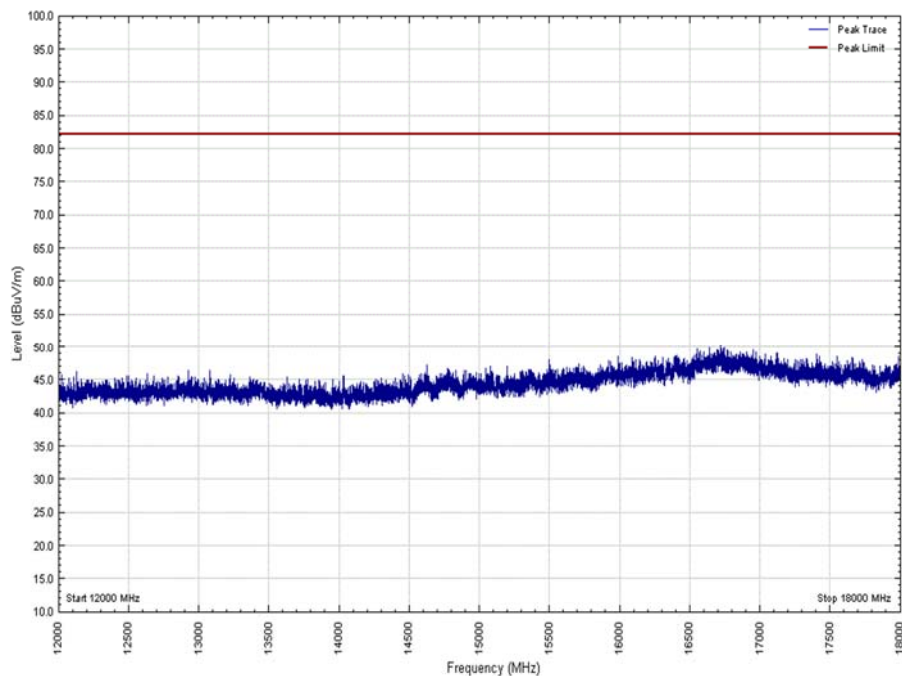
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Channel Position T - Band 2 - Range 4000 to 8000 MHz - Vertical



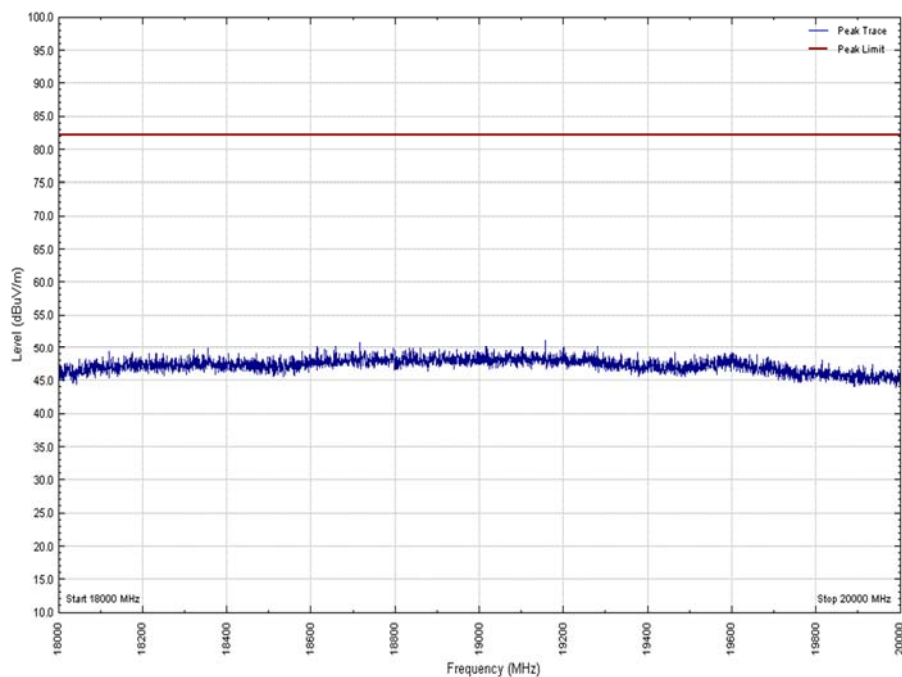
Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz -
Channel Position T - Band 3 - Range 8000 to 12000 MHz - Vertical



Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz -
Channel Position T - Band 4 - Range 12000 to 18000 MHz - Vertical



Antenna A - NB-IoT SA Modulation N:QPSK - NB-IoT SA Carrier Bandwidth N:180 kHz -
Channel Position T - Band 5 - Range 18000 to 20000 MHz - Vertical



Limit

82.2dBuV/m



Product Service

SECTION 3

TEST EQUIPMENT USED



Product Service

3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Maximum Peak Output Power and Peak to Average Ratio - Conducted					
Hygrometer	Rotronic	Hygropalm	2404	12	26-Apr-2019
Analyser	Keysight	N9030A	4654	12	06-Oct-2018
Analyser	Rohde & Schwarz	ZVA 40	3548	12	02-Oct-2018
Calibration kit	Rohde & Schwarz	ZV-Z54	4368	12	06-Mar-2019
Power Supply	Farnell	H60-25	1092	-	O/P MON
DMM	White Gold	WG022	0190	12	24-Nov-2018
Occupied Bandwidth					
Hygrometer	Rotronic	Hygropalm	2404	12	26-Apr-2019
Analyser	Keysight	N9030A	4654	12	06-Oct-2018
Analyser	Rohde & Schwarz	ZVA 40	3548	12	02-Oct-2018
Calibration kit	Rohde & Schwarz	ZV-Z54	4368	12	06-Mar-2019
Power Supply	Farnell	H60-25	1092	-	O/P MON
DMM	White Gold	WG022	0190	12	24-Nov-2018
Band Edge					
Hygrometer	Rotronic	Hygropalm	2404	12	26-Apr-2019
Analyser	Keysight	N9030A	4654	12	06-Oct-2018
Analyser	Rohde & Schwarz	ZVA 40	3548	12	02-Oct-2018
Calibration kit	Rohde & Schwarz	ZV-Z54	4368	12	06-Mar-2019
Power Supply	Farnell	H60-25	1092	-	O/P MON
DMM	White Gold	WG022	0190	12	24-Nov-2018
Transmitter Spurious Emissions					
Hygrometer	Rotronic	Hygropalm	2404	12	26-Apr-2019
Analyser	Keysight	N9030A	4654	12	06-Oct-2018
Analyser	Rohde & Schwarz	ZVA 40	3548	12	02-Oct-2018
Calibration kit	Rohde & Schwarz	ZV-Z54	4368	12	06-Mar-2019
Power Supply	Farnell	H60-25	1092	-	O/P MON
DMM	White Gold	WG022	0190	12	24-Nov-2018
Transmitter Radiated Spurious Emissions					
Antenna 18-40GHz (Double Ridge Guide)	Link Microtek Ltd	AM180HA-K-TU2	230	24	02-May-2020
Pre-Amplifier	Phase One	PS04-0086	1533	12	12-Jan-2019
18GHz - 40GHz Pre-Amplifier	Phase One	PS04-0087	1534	12	02-Feb-2019
Screened Room (5)	Rainford	Rainford	1545	36	18-Jul-2019
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Multimeter	Iso-tech	IDM101	2419	12	23-Nov-2018
Antenna (Bilog)	Chase	CBL6143	2904	24	08-Aug-2019
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	22-Nov-2018
1501A 4.0M Km Km Cable	Rhophase	KPS-1501A-4000-KPS	4301	12	19-Feb-2019
Cable (Rx, Km-Km 2m)	Scott Cables	KPS-1501-2000-KPS	4526	6	31-Aug-2018
Cable (Yellow, Rx, Km-Km 2m)	Scott Cables	KPS-1501-2000-KPS	4527	6	15-Aug-2018

TU – Traceability Unscheduled

O/P Mon – Output Monitored with Calibrated Equipment



Product Service

3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:-

Test Discipline	Frequency / Parameter	MU
Conducted Maximum Peak Output Power	30 MHz to 20 GHz Amplitude	± 0.1 dB
Conducted Emissions	30 MHz to 20 GHz Amplitude	± 2.3 dB
Frequency Stability	30 MHz to 2 GHz	± 5.0 Hz
Occupied Bandwidth	Up to 20 MHz Bandwidth	± 1.1 Hz
Band Edge	30 MHz to 20 GHz Amplitude	± 2.3 dB
Radiated Emissions, Bilog Antenna, AOATS	30MHz to 1GHz Amplitude	5.1dB*
Radiated Emissions, Horn Antenna, AOATS	1GHz to 40GHz Amplitude	6.3dB*
Worst case error for both Time and Frequency measurement 12 parts in 10 ⁶		



Product Service

SECTION 5

ACCREDITATION, DISCLAIMERS AND COPYRIGHT



Product Service

4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT



This report relates only to the actual item/items tested.

Our UKAS Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our UKAS Accreditation.

Results of tests not covered by our UKAS Accreditation Schedule are marked NUA
(Not UKAS Accredited).

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Product Service

ANNEX A

MODULE LIST



Product Service

Configurations A & B			
Product	Product No	R-State	Serial No
Radio 2203 B2 B25	KRC 161 489/1	R1F	D825085419
Software Version:	CXP9013268/9	Revision:	AM00