Test Report Serial Number:	**45461627 R1.0**
Test Report Date:	**4 December 2020**
Project Number:	**1510**

Appendix O - Radiated Tx Spurious Emissions Measurement Plots

Summary of Radiated Tx Emissions (Restricted Band)

Measured Frequency Range (MHz)	Channel Frequency	Antenna Polarization	Emission Frequency	Measured Emission [E_{Meas}] (dBuV)	Antenna ACF [ACF] (dB)	Cable Loss [L_C] (dB)	Amplifier Gain [G_A] (dB)	Corrected Emission [E_{Corr}] (dBuV/m)	Limit (dBuV)	Margin (dB)
9kHz - 30MHz	2442.0	Front	ND	ND (1)	0.00	0.00	0.00 (3)	ND (2)	n/a	**n/a**
9kHz - 30MHz	2442.0	Side	ND	ND (1)	0.00	0.00	0.00 (3)	ND (2)	n/a	**n/a**
30-1000MHz	2442.0	Horizontal	745.2MHz	37.88	0.00	0.00	0.00 (3)	37.88 (2)	46.0	**8.1**
30-1000MHz	2442.0	Vertical	955.9MHz	39.24	0.00	0.00	0.00 (3)	39.24 (2)	46.0	**6.8**
1 - 3GHz	2442.0	Horizontal	ND	ND (1)	27.40	4.58	0.00 (3)	ND	54.0	**n/a**
1 - 3GHz	2442.0	Vertical	ND	ND (1)	27.40	4.58	0.00 (3)	ND	54.0	**n/a**
3-13GHz	2442.0	Horizontal	ND	ND (1)	36.76	9.86	0.00 (3)	ND	54.0	**n/a**
3-13GHz	2442.0	Vertical	ND	ND (1)	36.76	9.86	0.00 (3)	ND	54.0	**n/a**
13-18GHz	2442.0	Horizontal	ND	ND (1)	38.75	16.54	0.00 (3)	ND	54.0	**n/a**
13-18GHz	2442.0	Vertical	ND	ND (1)	38.75	16.54	0.00 (3)	ND	54.0	**n/a**
18-26GHz	2442.0	Horizontal	ND	ND (1)	43.50	21.86	26.00	ND	54.0	**n/a**
18-26GHz	2442.0	Vertical	ND	ND (1)	43.50	21.86	26.00	ND	54.0	**n/a**
								Results:	**Complies**	

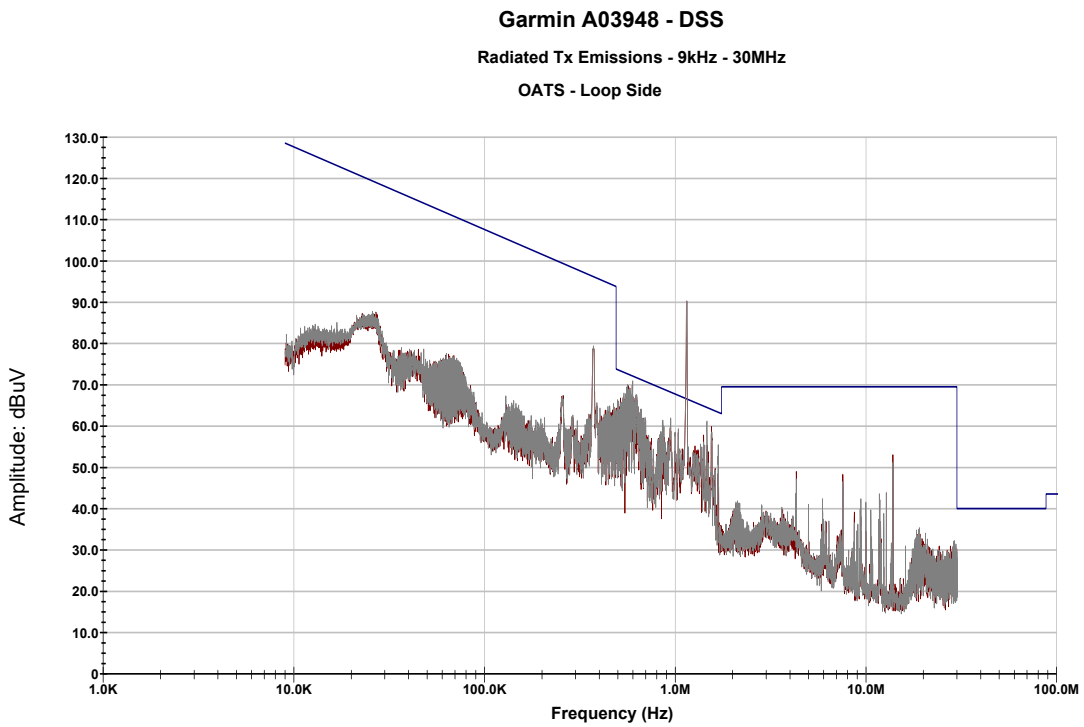
(1) No Emissions Detected (ND) above ambient or within 20dB of the limit

(2) Antenna ACF, Cable Loss and Amplifier Gain corrected in Spectrum Analyzer Transducer Factor

(3) External Amplier not used

$E_{Corr} = E_{Meas} + ACF + L_C - G_A$

Radiated Emissions - Restricted Band

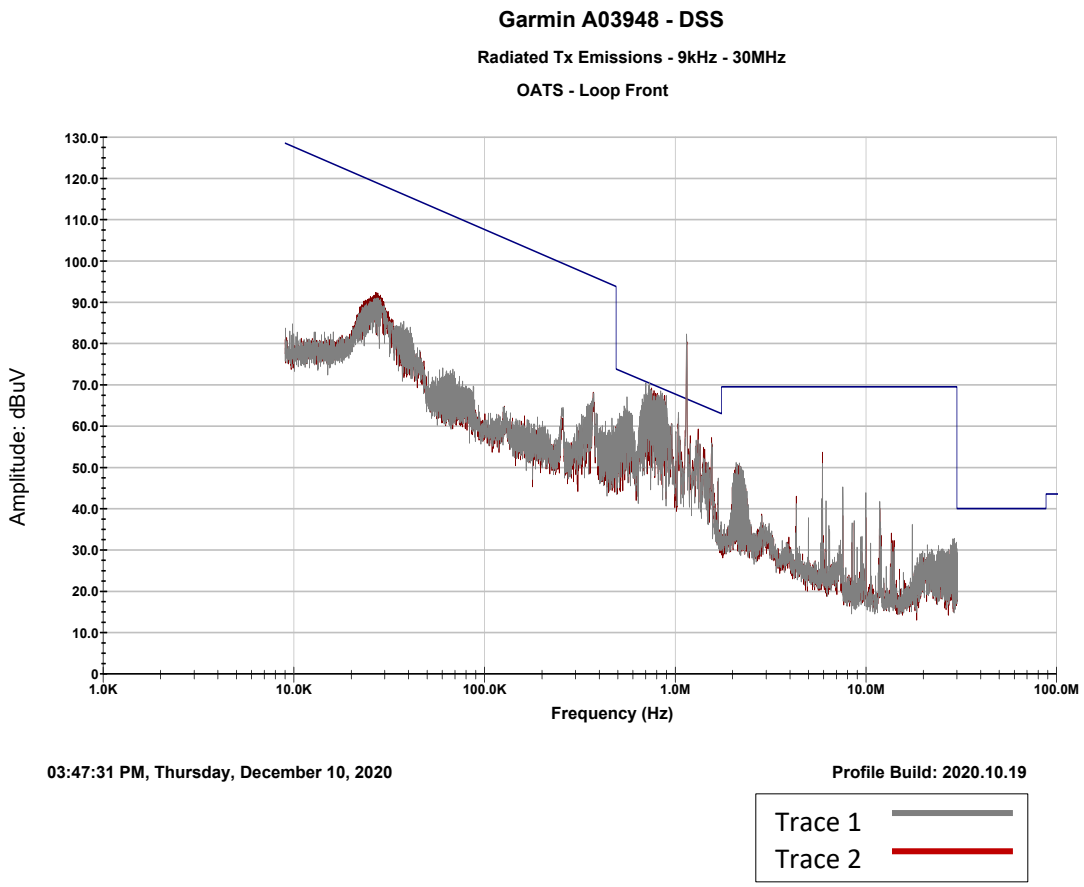


Frequency Range:	Antenna Polarization:	Emission Frequency:
9kHz - 30MHz	**Front**	**ND**
Channel Frequency:	**Modulation:**	**Measured Emission:**
2442.00 MHz	**8-DPSK**	**ND** dBuV

Trace 1: Ambient

Trace 2: Ambient + DUT

Radiated Emissions - Restricted Band

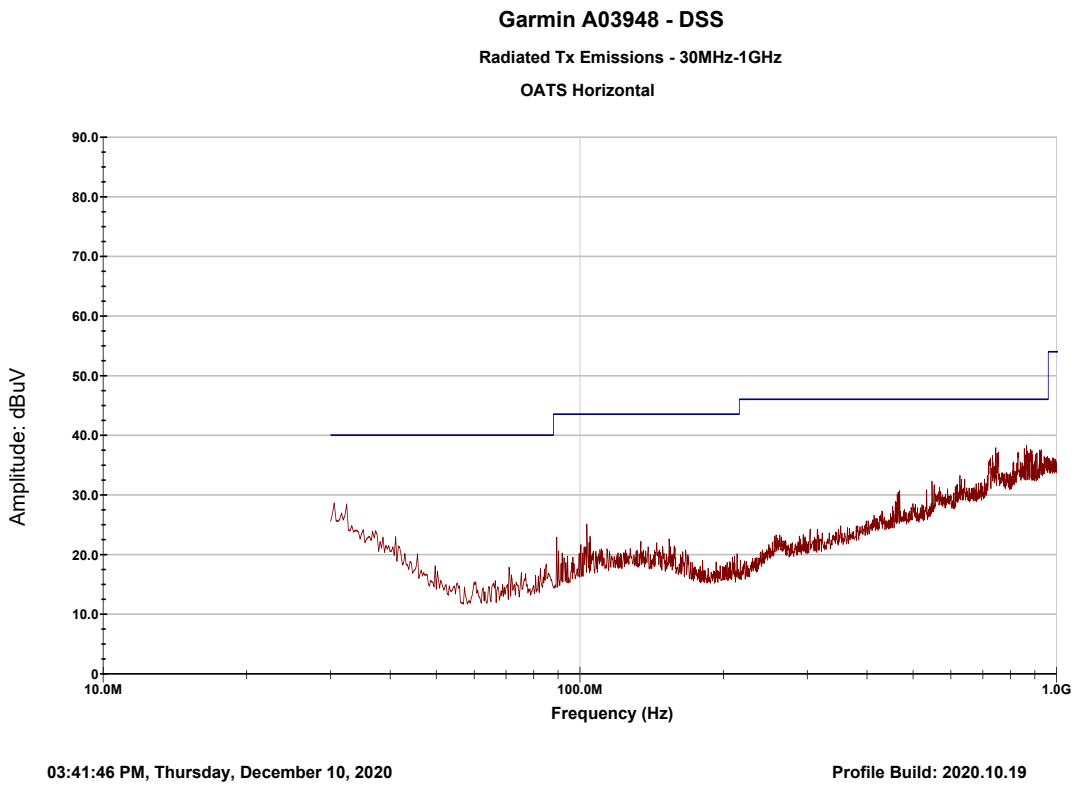


Frequency Range:	Antenna Polarization:	Emission Frequency:
9kHz - 30MHz	**Side**	**ND**
Channel Frequency:	**Modulation:**	**Measured Emission:**
2442.00 MHz	**8-DPSK**	**ND** dBuV

Trace 1: Ambient

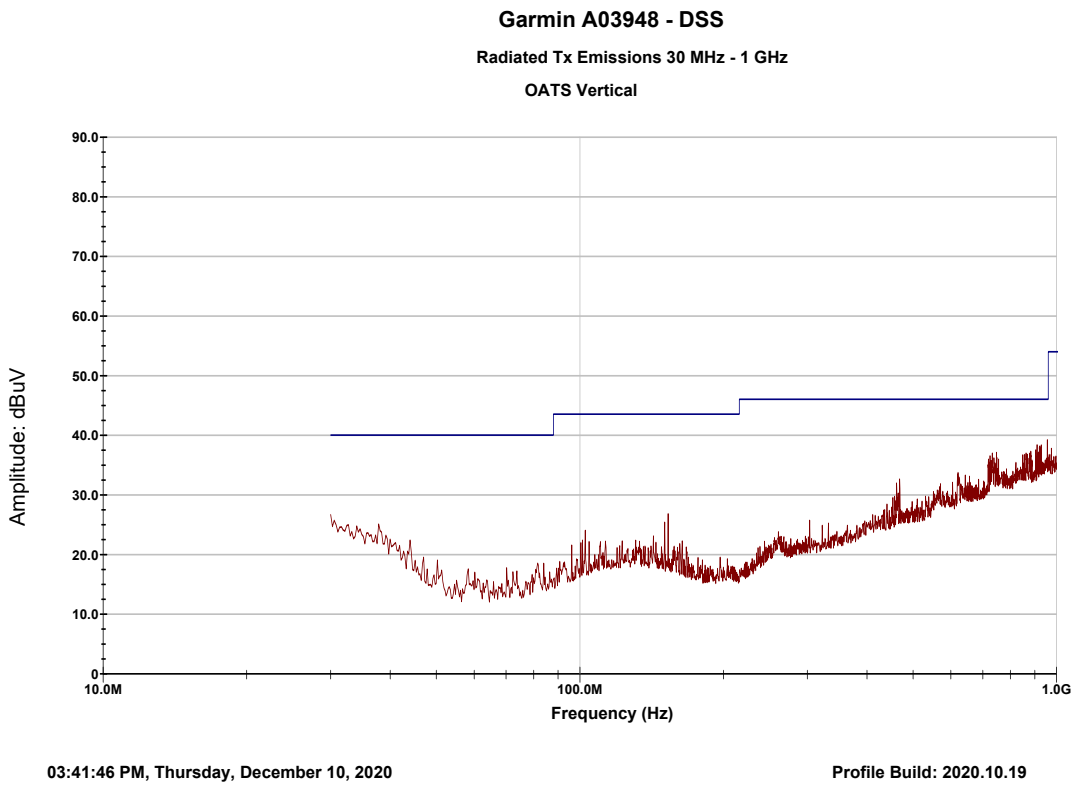
Trace 2: Ambient + DUT

Radiated Emissions - Restricted Band



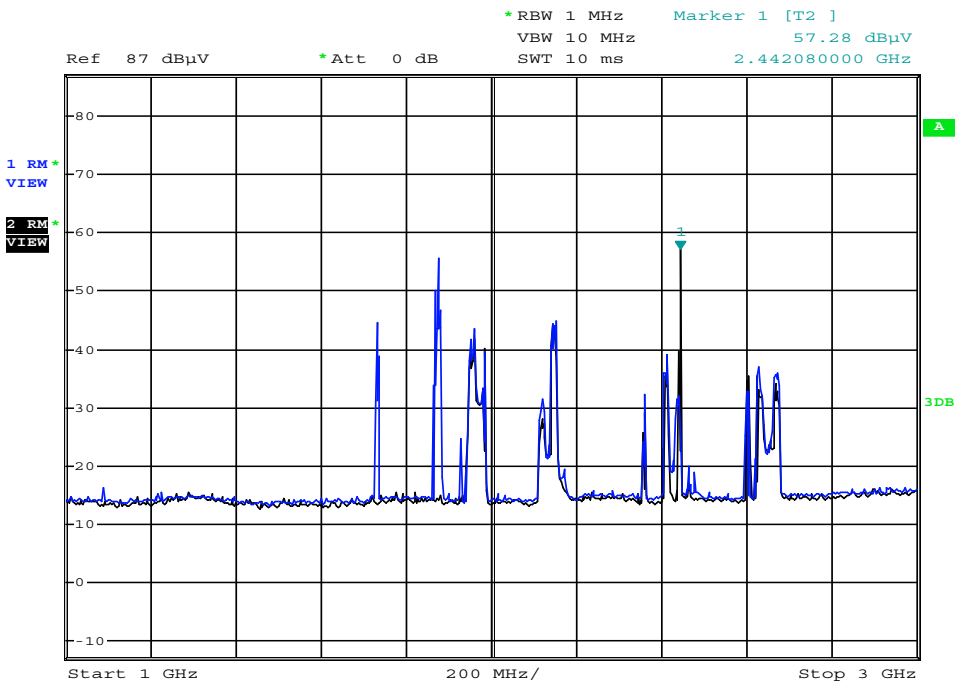
Frequency Range:	Antenna Polarization:	Emission Frequency:
30-1000MHz	**Horizontal**	**745.2MHz**
Channel Frequency:	Modulation:	Measured Emission:
2442.00 MHz	**8-DPSK**	**37.88** dBuV

Radiated Emissions - Restricted Band



Frequency Range:	Antenna Polarization:	Emission Frequency:
30-1000MHz	**Vertical**	**955.9MHz**
Channel Frequency:	Modulation:	Measured Emission:
2442.00 MHz	**8-DPSK**	**39.24** dBuV

Radiated Emissions - Restricted Band



Date: 23.NOV.2020 16:30:00

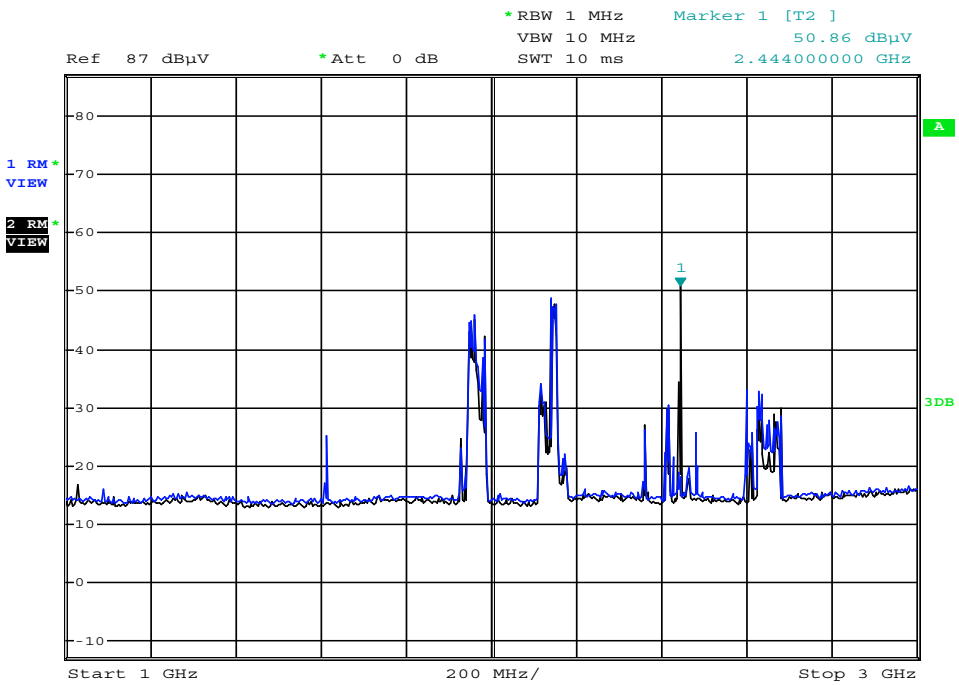
Frequency Range:	Antenna Polarization:	Emission Frequency:
1 - 3GHz	**Horizontal**	**ND**
Channel Frequency:	**Modulation:**	**Measured Emission:**
2442.00 MHz	**8-DPSK**	**ND** dBuV

Trace 1: Ambient

Trace 2: Ambient + DUT

Marker 1: Fundamental

Radiated Emissions - Restricted Band



Date: 23.NOV.2020 16:36:48

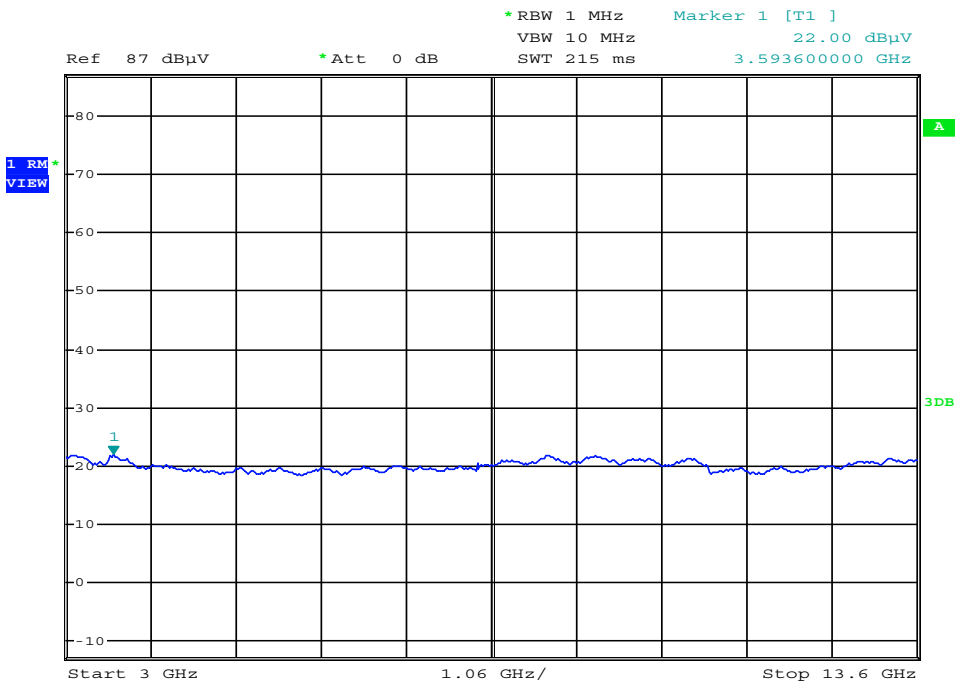
Frequency Range:	Antenna Polarization:	Emission Frequency:
1 - 3GHz	**Vertical**	**ND**
Channel Frequency:	**Modulation:**	**Measured Emission:**
2442.00 MHz	**8-DPSK**	**ND** dBuV

Trace 1: Ambient

Trace 2: Ambient + DUT

Marker 1: Fundamental

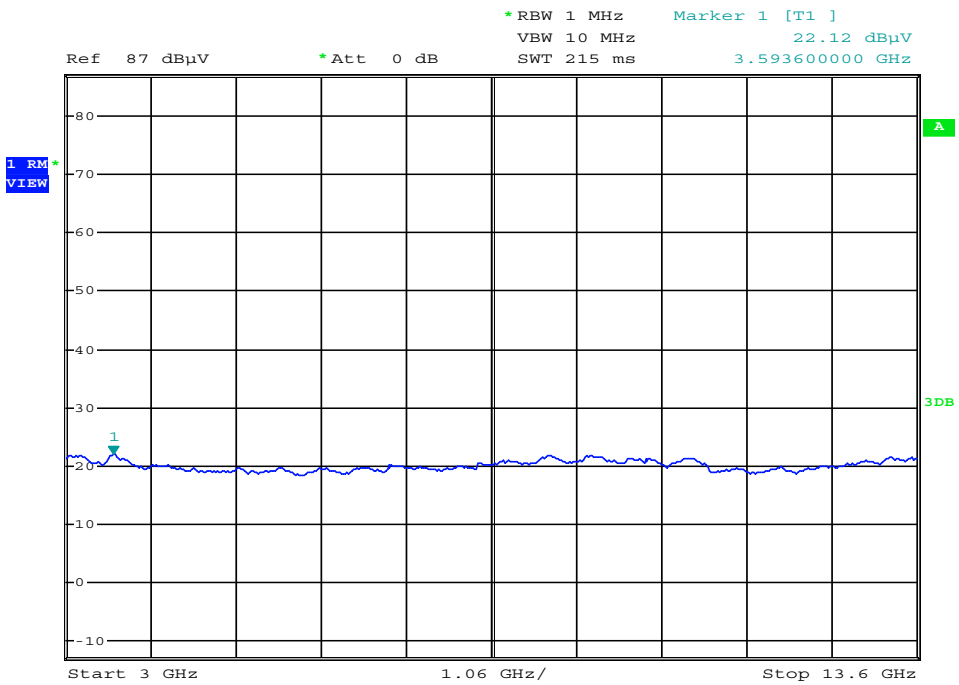
Radiated Emissions - Restricted Band



Date: 23.NOV.2020 16:31:16

Frequency Range:	Antenna Polarization:	Emission Frequency:
3-13GHz	**Horizontal**	**ND**
Channel Frequency:	**Modulation:**	**Measured Emission:**
2442.00 MHz	**8-DPSK**	**ND** dBuV

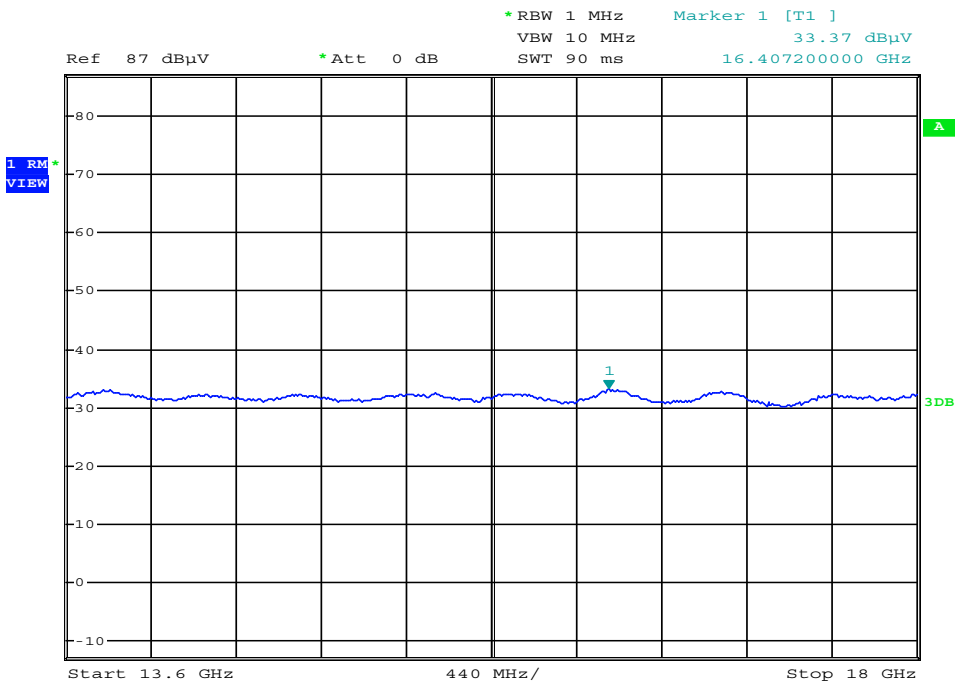
Radiated Emissions - Restricted Band



Date: 23.NOV.2020 16:33:31

Frequency Range:	Antenna Polarization:	Emission Frequency:
3-13GHz	**Vertical**	**ND**
Channel Frequency:	**Modulation:**	**Measured Emission:**
2442.00 MHz	**8-DPSK**	**ND** dBuV

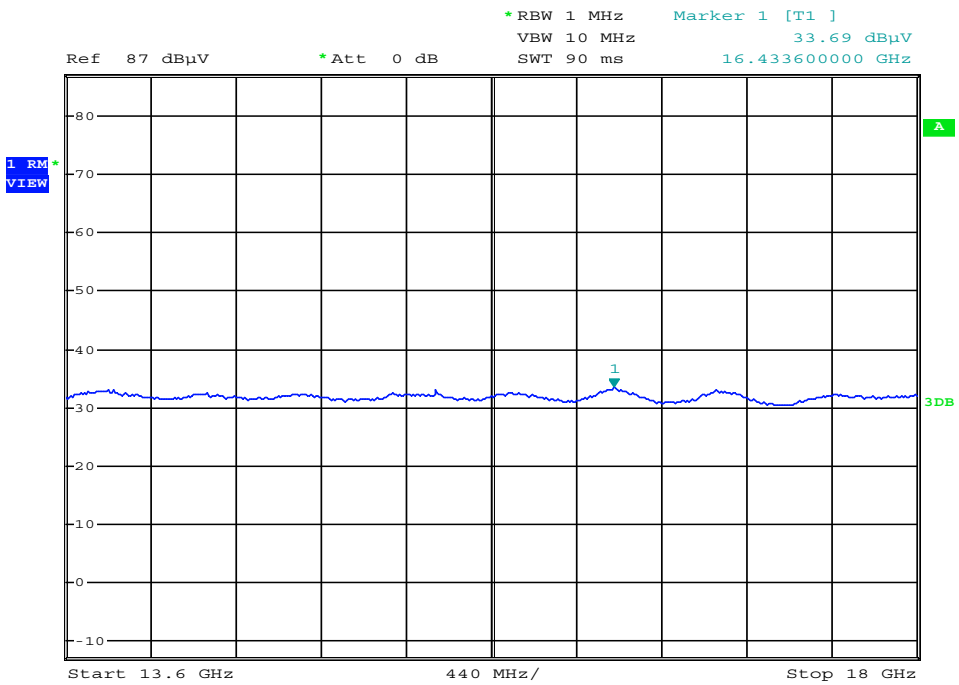
Radiated Emissions - Restricted Band



Date: 23.NOV.2020 16:31:39

Frequency Range:	Antenna Polarization:	Emission Frequency:
13-18GHz	**Horizontal**	**ND**
Channel Frequency:	**Modulation:**	**Measured Emission:**
2442.00 MHz	**8-DPSK**	**ND** dBuV

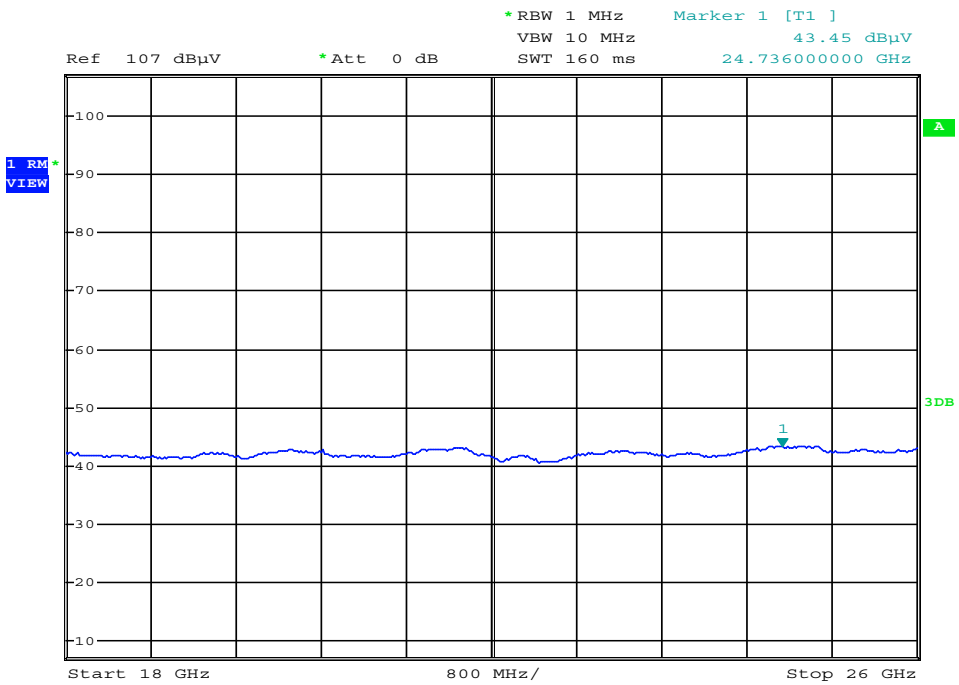
Radiated Emissions - Restricted Band



Date: 23.NOV.2020 16:32:58

Frequency Range:	Antenna Polarization:	Emission Frequency:
13-18GHz	**Vertical**	**ND**
Channel Frequency:	**Modulation:**	**Measured Emission:**
2442.00 MHz	**8-DPSK**	**ND** dBuV

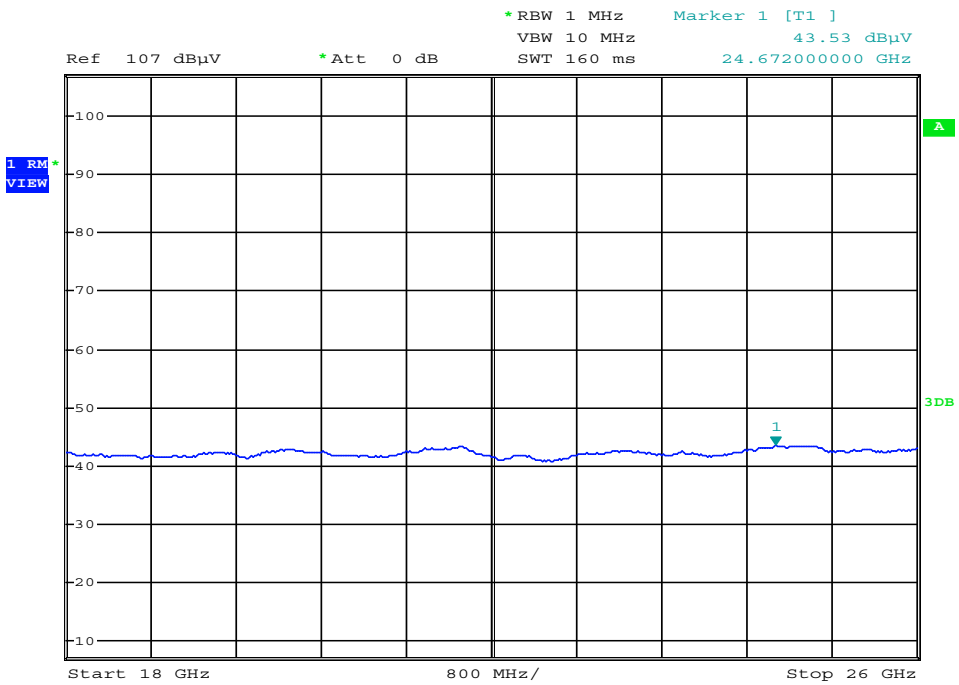
Radiated Emissions - Restricted Band



Date: 26.NOV.2020 14:44:03

Frequency Range:	Antenna Polarization:	Emission Frequency:
18-26GHz	**Horizontal**	**ND**
Channel Frequency:	**Modulation:**	**Measured Emission:**
2442.00 MHz	**8-DPSK**	**ND** dBuV

Radiated Emissions - Restricted Band



Date: 26.NOV.2020 14:59:07

Frequency Range:	Antenna Polarization:	Emission Frequency:
18-26GHz	**Vertical**	**ND**
Channel Frequency:	**Modulation:**	**Measured Emission:**
2442.00 MHz	**8-DPSK**	**ND** dBuV

Summary of Conducted Tx Emissions (Restricted Band)

Measured Frequency Range (MHz)	Channel Frequency	Emission Frequency	Antenna Gain [G_T]	Measured Emission [P_T] (dBm)	e.r.p. or e.i.r.p. (dB)	Ground Reflection [L_R] (dB)	Conversion dBm to dBuV/m [CF_R] (dB)	Distance Correction [L_D]	Corrected Emission [E_{Corr}] (dBuV/m)	Limit (dBuV)	Margin (dB)
9kHz - 30MHz	13.56	13.56* MHz	-0.15 dBd	-70.57	-70.72	6.0	107.0	9.54	32.7	69.5	**36.8**
		487.8 MHz		-73.16	-73.31	4.7	107.0		28.9	46.0	**17.2**
		515.0 MHz		-74.91	-75.06	4.7	107.0		27.1	46.0	**18.9**
		610.1 MHz		-76.80	-76.95	4.7	107.0		25.2	46.0	**20.8**
									Results:	**Complies**	

Ground Reflection Factor [CF_R] = 6dB for f < 30MHz, 4.7dB for 30MHz < f < 1000MHz, 0dB for f > 1000MHz

e.r.p. = $P_T + G_T - L_C$, where P_T = measured emission (dBm), G_T = DUT antenna gain (dBd), L_C = loss between the DUT transmitter and DUT antenna (dB) = 0

e.i.r.p. = $P_T + G_T - L_C$, where P_T = measured emission (dBm), G_T = DUT antenna gain (dBi), L_C = loss between the DUT transmitter and DUT antenna (dB) = 0

G_T(dBd) = G_T(dBi) - 2.15, e.r.p. = e.i.r.p - 2.15

G_T minimum = 2dBi, -0.15dBd

Distance Correction [L_D] = 20Log(D), where D would have been the measurement distance = 3m

Conversion dBm to dBuV/m [CF] = 107 for e.r.p. and G_T expressed as dBd, 104.85 for e.i.r.p. and G_T expressed as dBi

E_{Corr} = e.r.p - [L_D] + [CF] + [CF_R]

E_{Corr} = e.i.r.p - [L_D] + [CF] + [CF_R]

Margin = Limit - E_{Corr}

* Fundamental

Summary of Radiated Tx Emissions (Restricted Band)

Measured Frequency Range (MHz)	Channel Frequency	Antenna Polarization	Emission Frequency	Measured Emission [E_{Meas}] (dBuV)	Antenna ACF [ACF] (dB)	Cable Loss [L_C] (dB)	Amplifier Gain [G_A] (dB)	Corrected Emission [E_{Corr}] (dBuV/m)	Limit (dBuV)	Margin (dB)
1 - 3GHz	13.56MHz	Horizontal	ND	ND (1)	27.40	4.58	0.00 (3)	ND	54.0	**n/a**
1 - 3GHz		Vertical	ND	ND (1)	27.40	4.58	0.00 (3)	ND	54.0	**n/a**
3-13GHz		Horizontal	ND	ND (1)	36.76	9.86	0.00 (3)	ND	54.0	**n/a**
3-13GHz		Vertical	ND	ND (1)	36.76	9.86	0.00 (3)	ND	54.0	**n/a**
13-18GHz		Horizontal	ND	ND (1)	38.75	16.54	0.00 (3)	ND	54.0	**n/a**
13-18GHz		Vertical	ND	ND (1)	38.75	16.54	0.00 (3)	ND	54.0	**n/a**
18-26GHz		Horizontal	ND	ND (1)	43.50	21.86	26.00	ND	54.0	**n/a**
18-26GHz		Vertical	ND	ND (1)	43.50	21.86	26.00	ND	54.0	**n/a**
								Results:	**Complies**	

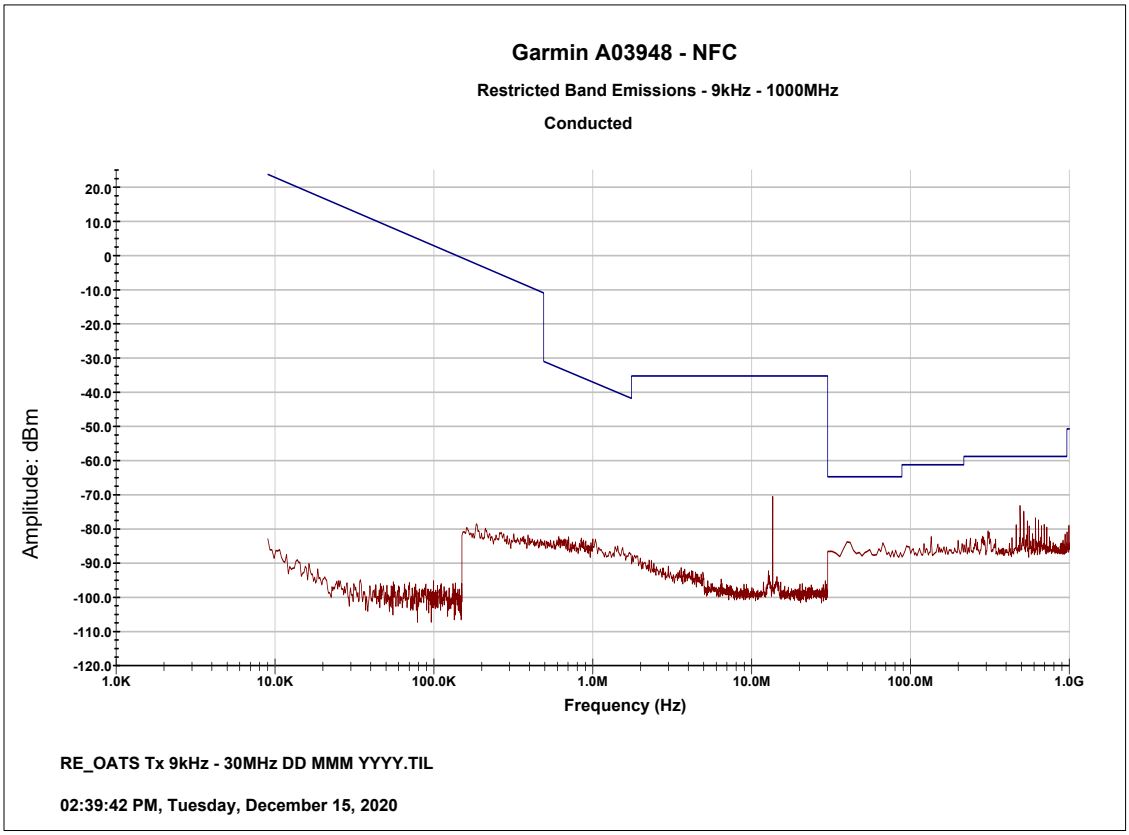
(1) No Emissions Detected (ND) above ambient or within 20dB of the limit

(2) Antenna ACF, Cable Loss and Amplifier Gain corrected in Spectrum Analyzer Transducer Factor

(3) External Amplier not used

$E_{Corr} = E_{Meas} + ACF + L_C - G_A$

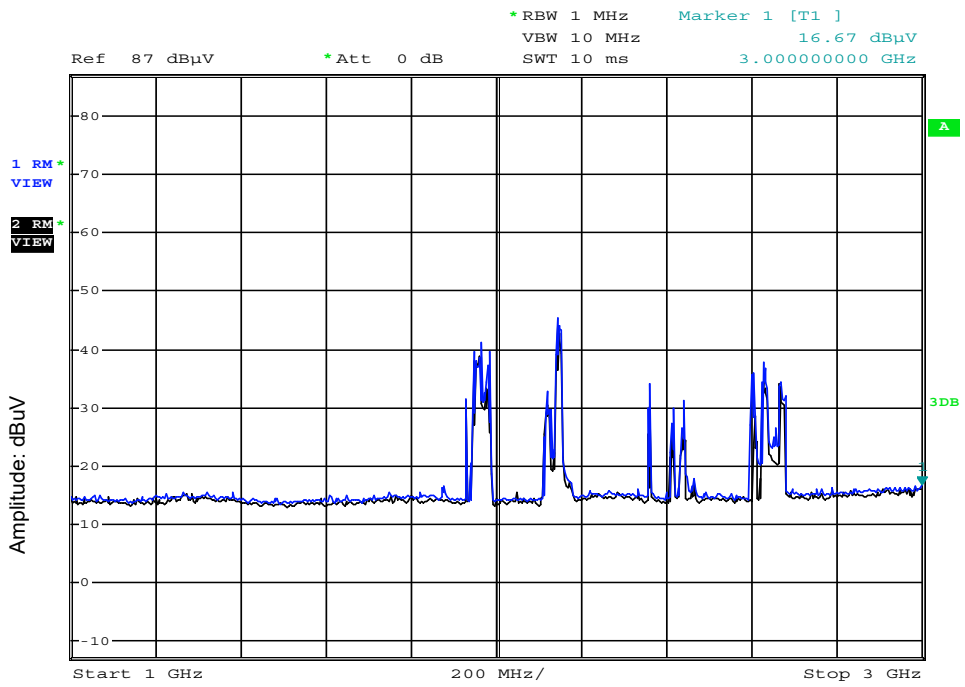
Conducted Emissions - Restricted Band



Frequency Range:	Antenna Polarization:	Emission Frequency:
9kHz - 30MHz	**Conducted**	**-**
Channel Frequency:	**Modulation:**	**Measured Emission:**
13.56 MHz	**ASK**	**-** dBuV

Limit Line Converted to dBm

Radiated Emissions - Restricted Band



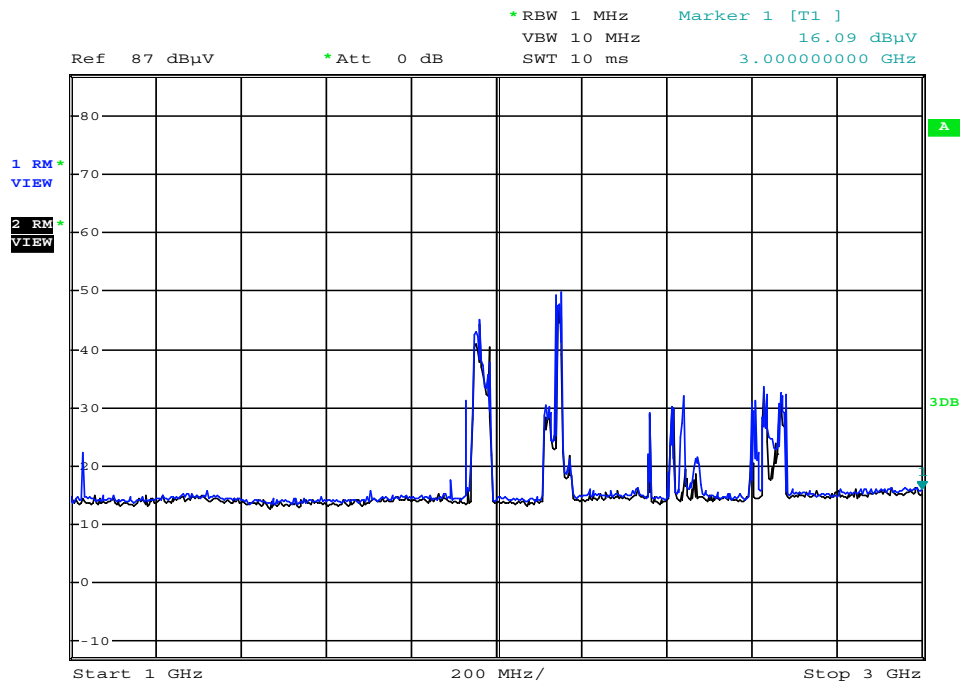
Date: 23.NOV.2020 13:21:44

Frequency Range:	Antenna Polarization:	Emission Frequency:
1 - 3GHz	**Horizontal**	**ND**
Channel Frequency:	**Modulation:**	**Measured Emission:**
13.56 MHz	**ASK**	**ND** dBuV

Trace 1: Ambient

Trace 2: Ambient + DUT

Radiated Emissions - Restricted Band



Date: 23.NOV.2020 13:17:27

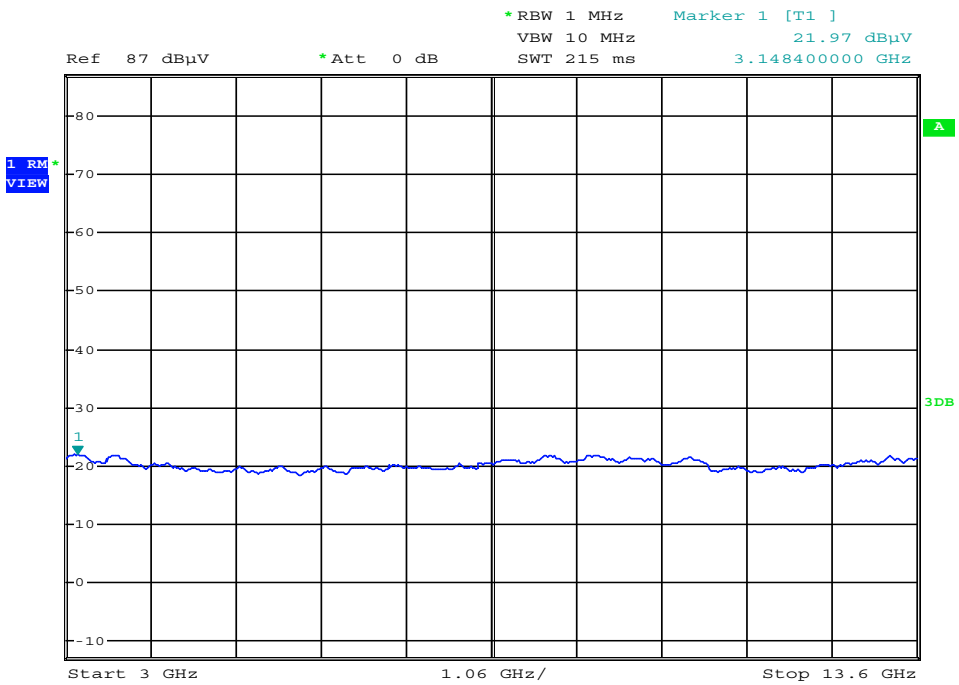
Frequency Range:	Antenna Polarization:	Emission Frequency:
1 - 3GHz	**Vertical**	**ND**
Channel Frequency:	**Modulation:**	**Measured Emission:**
13.56 MHz	**ASK**	**ND** dBuV

Trace 1: Ambient

Trace 2: Ambient + DUT

Marker 1: Fundamental

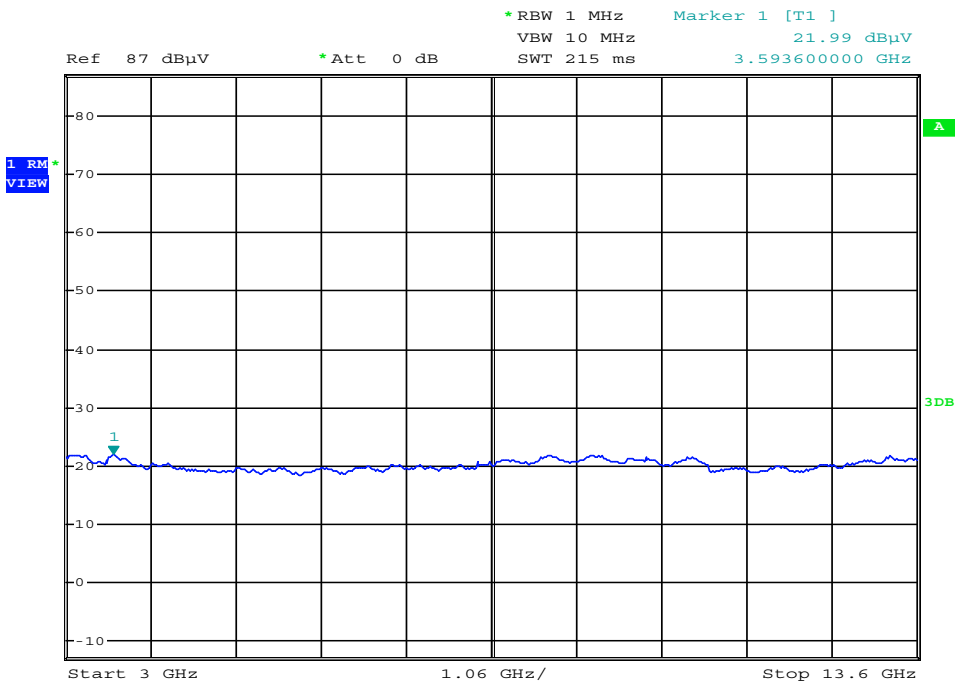
Radiated Emissions - Restricted Band



Date: 23.NOV.2020 13:20:40

Frequency Range:	Antenna Polarization:	Emission Frequency:
3-13GHz	**Horizontal**	**ND**
Channel Frequency:	**Modulation:**	**Measured Emission:**
13.56 MHz	**ASK**	**ND** dBuV

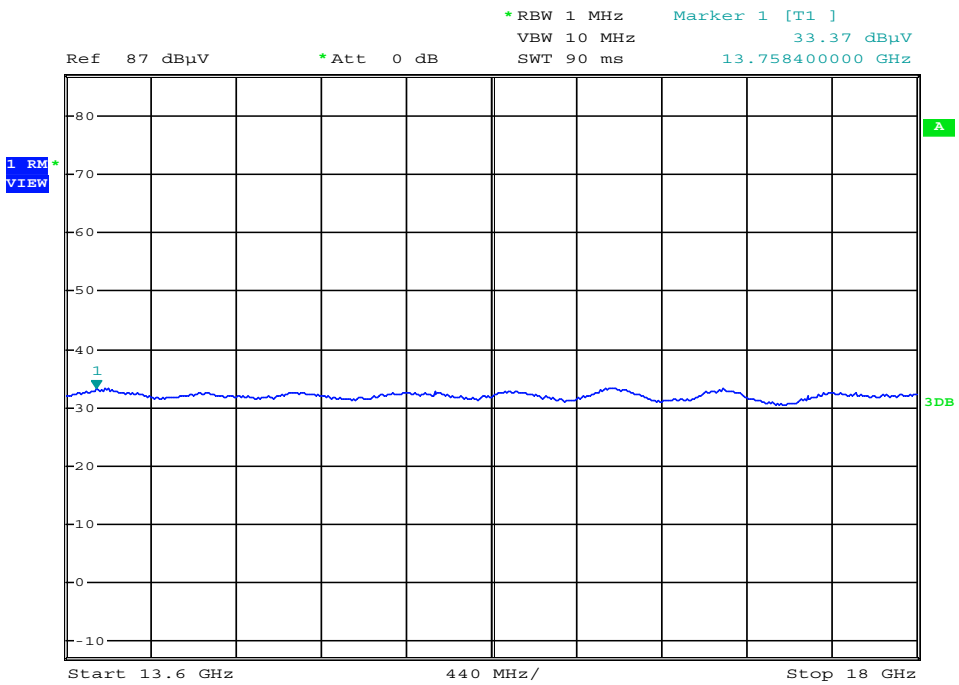
Radiated Emissions - Restricted Band



Date: 23.NOV.2020 13:18:11

Frequency Range:	Antenna Polarization:	Emission Frequency:
3-13GHz	**Vertical**	**ND**
Channel Frequency:	**Modulation:**	**Measured Emission:**
13.56 MHz	**ASK**	**ND** dBuV

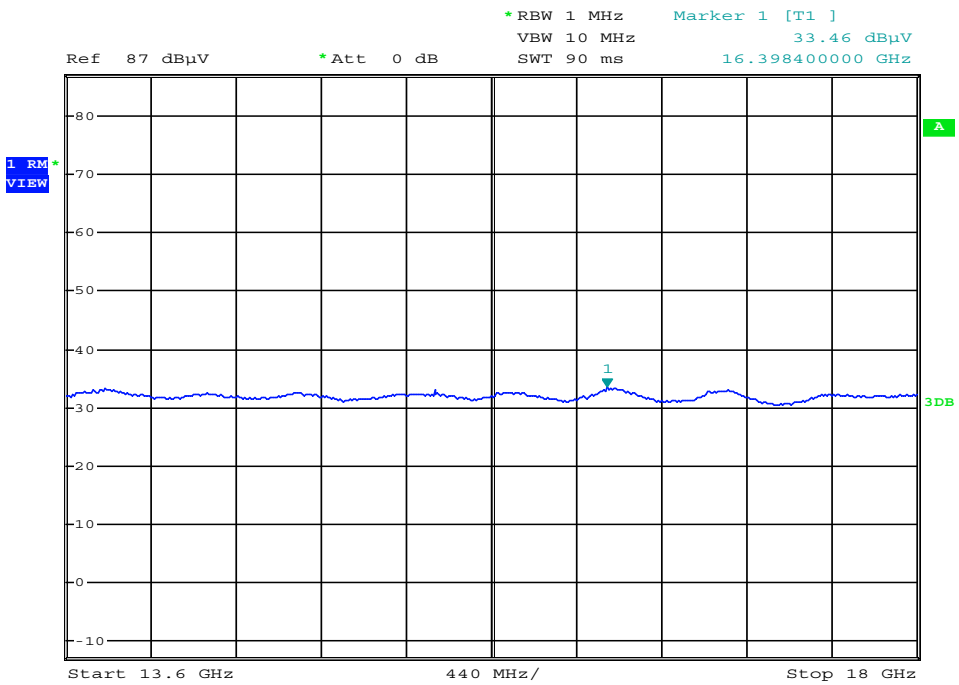
Radiated Emissions - Restricted Band



Date: 23.NOV.2020 13:20:05

Frequency Range:	Antenna Polarization:	Emission Frequency:
13-18GHz	**Horizontal**	**ND**
Channel Frequency:	**Modulation:**	**Measured Emission:**
13.56 MHz	**ASK**	**ND** dBuV

Radiated Emissions - Restricted Band



Date: 23.NOV.2020 13:18:38

Frequency Range:	Antenna Polarization:	Emission Frequency:
13-18GHz	**Vertical**	**ND**
Channel Frequency:	**Modulation:**	**Measured Emission:**
2442.00 MHz	**8-DPSK**	**ND** dBuV