

Radiated Field Strength												
Frequency (MHz)	Mode	Modulation	Detector	Antenna Polarization	Frequency Range (MHz)	Measured Field Strength [FS <sub>Meas</sub> ] (dBuV @ 3m)	Cable Loss [L <sub>c</sub> ] (dBm)	Receive Antenna [ACF] (dB)	Corrected Field Strength [FS <sub>Corr</sub> ] (dBuV/m @3m)	Limit @30m [Lim <sub>30m</sub> ] (dBuV/m)	Limit* @3m [Lim <sub>3m</sub> ] (dBuV/m)	Margin (dB)
13.56	NFC	ASK	RMS	Front	13.410 - 13.553	25.02	0.5	10.65	36.17	50.50	90.5	54.3
					13.567 - 13.710	23.41			34.56			55.9
					13.110 - 13.410	6.87			18.02	40.50	80.5	62.5
					13.710 - 14.010	13.40			24.55			56.0
<b>Result:</b>										<b>Complies</b>		

\* Limit @ 3m = Limit @ 30m + 40dB/decade = 50.5dBuV/m + 40dB = 90.5dBuV/m

\* Limit @ 3m = Limit @ 30m + 40dB/decade = 40.5dBuV/m + 40dB = 80.5dBuV/m

FS<sub>Corr</sub> = FS<sub>Meas</sub> + ACF + L<sub>c</sub>

Margin = Limit<sub>3m</sub> - FS<sub>Corr</sub>

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Frequency (MHz)	Mode	Modulation	Detector	Antenna Polarization	Frequency Range (MHz)	Measured Field Strength [FS <sub>Meas</sub> ] (dBuV @ 3m)	Cable Loss [L <sub>c</sub> ] (dBm)	Receive Antenna [ACF <sup>H</sup> ] (dBuA/m)	Corrected Field Strength [H <sub>Corr</sub> ] (dBuA/m @3m)	Limit @30m [Lim <sub>30m</sub> ] (dBuV/m)	Limit** @3m [Lim <sub>3m</sub> ] (dBuA/m)	Margin (dB)
13.56	NFC	ASK	RMS	Front	13.410 - 13.553	25.02	0.5	-40.85	-15.33	50.50	39.0	54.3
					13.567 - 13.710	23.41			-16.94			55.9
					13.110 - 13.410	6.87			-33.48	40.50	29.0	62.5
					13.710 - 14.010	13.40			-26.95			56.0
<b>Result:</b>										<b>Complies</b>		

\*\* Limit @ 3m = Limit @ 30m + 40dB/decade = 50.5dBuV/m + 40dB = 90.5dBuV/m

\*\* Limit @ 3m = Limit @ 30m + 40dB/decade = 40.5dBuV/m + 40dB = 80.5dBuV/m

In accordance with ISED Notice 2020 - DRS0023:

"Guidance on Magnetic Field Strength Radiated Emissions Measurements 9kHz - 30MHz"

#### Limit Correction

$$\text{Limit}^H (\text{dBuA/m}) = \text{Limit}^E (\text{dBuV/m}) - Z_0 (\text{dB}\Omega)$$

Where  $Z_0$  = Free-Space Impedance =  $120\pi\Omega = 377\Omega \Rightarrow 20\text{Log}377\Omega = 51.5\text{dB}\Omega$

$$\text{Limit}^H (\text{dBuA/m}) = \text{Limit}^E (\text{dBuV/m}) - Z_0 (\text{dB}\Omega) = 90.5\text{dBuV/m} - 51.5\text{dB}\Omega = 39\text{dBuA/m @ 3m}$$

$$\text{Limit}^H (\text{dBuA/m}) = \text{Limit}^E (\text{dBuV/m}) - Z_0 (\text{dB}\Omega) = 180.5\text{dBuV/m} - 51.5\text{dB}\Omega = 29\text{dBuA/m @ 3m}$$

#### Measurement Correction

$$H_{\text{Corr}} (\text{dBuA/m}) = E_{\text{Meas}} (\text{dBuV}) + \text{ACF}^H (\text{dB}/\Omega\text{m}) + L_c - G_A$$

Where ACF<sup>H</sup> is the Magnetic Antenna Correction Factor, L<sub>c</sub> is Cable Loss, G<sub>A</sub> is Pre-Amplifier Gain

External Pre-Amplifier (G<sub>A</sub>) not used

$$\text{Margin} = \text{Limit}_{3m} - H_{\text{Corr}}$$

# Out-Of-Band Field Strength

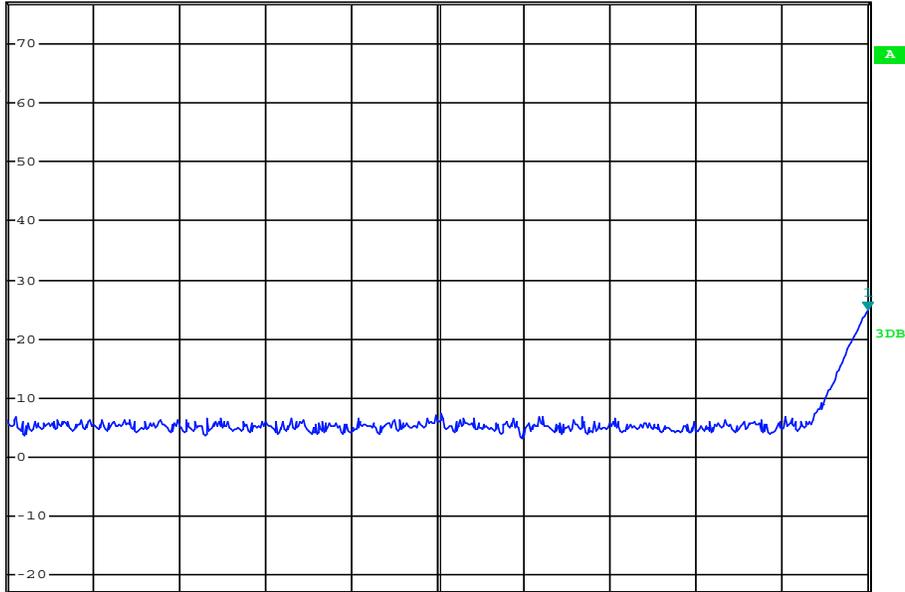


\*RBW 10 kHz    Marker 1 [T1 ]  
VBW 100 kHz    25.02 dBuV  
\*SWT 100 ms    13.553000000 MHz

Ref 77 dBuV

\*Att 10 dB

1 RM  
VIEW



Start 13.41 MHz    14.3 kHz/    Stop 13.553 MHz

Date: 2.JUN.2021 12:17:50

Channel Frequency: <b>13.56 MHz</b>	Frequency Range: <b>13.410 - 13.533 MHz</b>	Antenna Polarization: <b>Front</b>
Modulation Setting: <b>ASK</b>	Protocol: <b>NFC</b>	Measured Field Strength: <b>25.02 dBuV</b>

# Out-Of-Band Field Strength

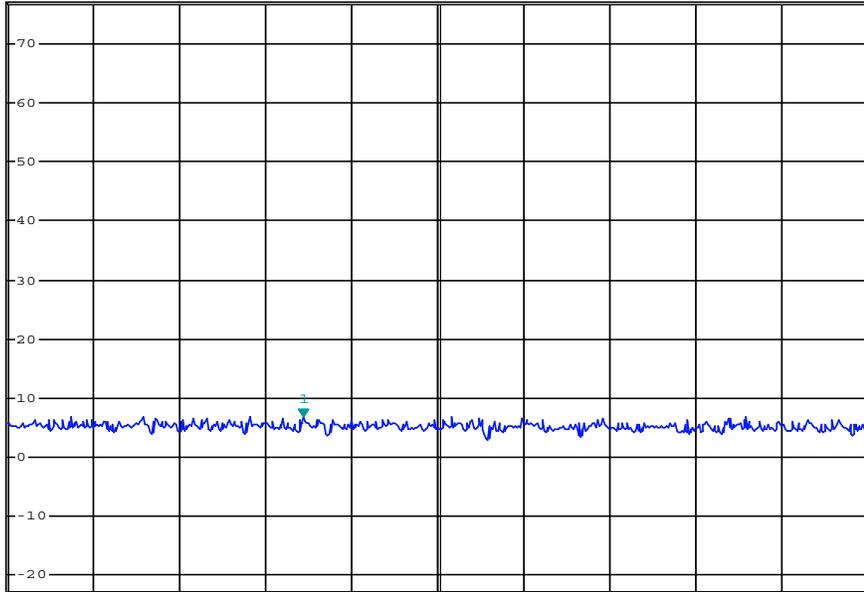


\*RBW 10 kHz    Marker 1 [T1 ]  
VBW 100 kHz    6.87 dBuV  
\*SWT 100 ms    13.213200000 MHz

Ref 77 dBuV

\*Att 10 dB

1 RM  
VIEW



Start 13.11 MHz                      30 kHz/                      Stop 13.41 MHz

Date: 2.JUN.2021 12:19:59

Channel Frequency: <b>13.56 MHz</b>	Frequency Range: <b>13.110 - 13.410 MHz</b>	Antenna Polarization: <b>Front</b>
Modulation Setting: <b>ASK</b>	Protocol: <b>NFC</b>	Measured Field Strength: <b>6.87 dBuV</b>

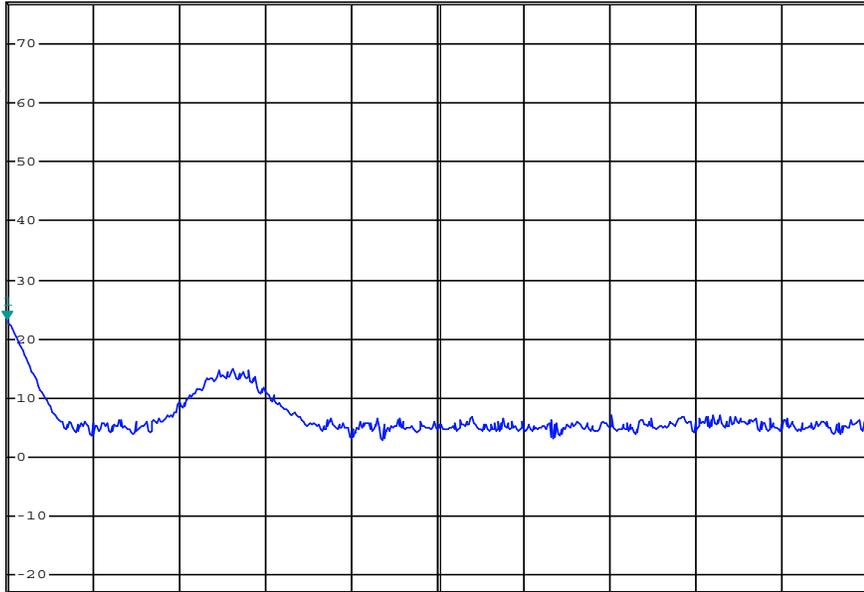
# Out-Of-Band Field Strength



\*RBW 10 kHz    Marker 1 [T1 ]  
 VBW 100 kHz    23.41 dBuV  
 \*Att 10 dB    \*SWT 100 ms    13.56780000 MHz

Ref 77 dBuV

1 RM  
 VIEW



Start 13.5678 MHz    14.22 kHz/    Stop 13.71 MHz

Date: 2.JUN.2021 12:19:24

Channel Frequency: <b>13.56 MHz</b>	Frequency Range: <b>13.567 - 13.710 MHz</b>	Antenna Polarization: <b>Front</b>
Modulation Setting: <b>ASK</b>	Protocol: <b>NFC</b>	Measured Field Strength: <b>23.41 dBuV</b>

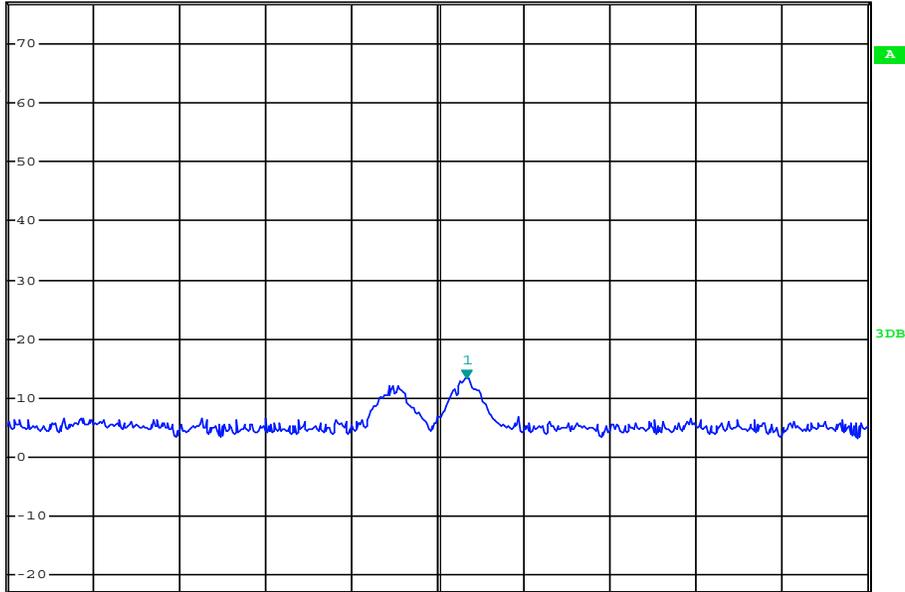
# Out-Of-Band Field Strength



\*RBW 10 kHz    Marker 1 [T1 ]  
 VBW 100 kHz    13.40 dBuV  
 \*Att 10 dB    \*SWT 100 ms    13.870200000 MHz

Ref 77 dBuV

1 RM  
 VIEW



Start 13.71 MHz    30 kHz/    Stop 14.01 MHz

Date: 2.JUN.2021 12:21:00

Channel Frequency: <b>13.56 MHz</b>	Frequency Range: <b>13.710 - 14.010 MHz</b>	Antenna Polarization: <b>Front</b>
Modulation Setting: <b>ASK</b>	Protocol: <b>NFC</b>	Measured Field Strength: <b>13.40 dBuV</b>