



# Aerial Facilities Limited

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**RE: TC322222 Correspondance No. 21408**  
**FCC ID:NEO55-1516Series.**

The reference to 100W on page 10 is part of a generic description for this type of equipment stating Aerial Facilities Limited manufacture 'Various models are available to cover frequency bands from 50MHz to 3000MHz with power levels up to 100Watts'. This is really a sales statement I perhaps we need to remove it from documents relating to FCC approval.

The actual description and specifications for this product 55-151601 are stated in section 3.1 and 3.2

This equipment has a Downlink path 1930-1990MHz and an Uplink path 1850-1910MHz. The passbands are dictated by the bandselective filters used at the mobile and base ports. The amplifier modules used in the equipment are wideband units 1800-2000MHz, this filtering preventing any unwanted frequencies being amplified.

In the downlink we use a 20W Class A amplifier, the power rating of the amplifier is chosen to ensure the linearity is sufficient for the equipment to comply to FCC regulations. As this equipment is designed for multi-carrier operation, we use a 20W amplifier to achieve the 3<sup>rd</sup> Order Intercept we require, in this case 56dBm. Using the automatic level control (ALC) the output per carrier is limited to 1W (for 3 Carriers), in this equipment the ALC is set to an output power of 39.5dBm (9W), this is the Peak envelope power of 3, 30dBm (1W) carriers in phase, this is the worst case for intermodulation generation. The ALC setting in conjunction with the amplifiers specified third order intercept point allows us to ensure no intermodulation product can exceed the FCC requirement of -13dBm. Below is a summary of the downlink parameters, remembering that the combined PEP of all carriers cannot exceed 39.5dBm.

<b>Amp OIP3 (dBm)</b>	56	
<b>Amp P1dB (dBm)</b>	43	
<b>Duplexer Loss (dB)</b>	0.7	
<b>Carrier Level (dBm)</b>	30	
<b>Unit OIP3 (dBm)</b>	55.3	
<b>Unit P1dB (dBm)</b>	42.3	
<b>Pim max (dBm)</b>	-13	<b>Desired maximum intermod level</b>

Number of Carriers	PEP (dBm)	IM Att(dBc)	IM Level (dBm)	Pc max
2	36.0	50.6	-20.6	32.5
3	39.5	43.6	-13.6	30.2

**Note:**

**PEP = Peak Envelope Power**

**IM ATT= Level of the Intermodulation Products below wanted carrier**

**IM LEVEL= Level of the Intermodulation products**

**Pc MAX= Maximum Power level for specified number of carriers to met FCC Requirements.**

For 8 Carriers the power will be limited to 21.4 dBm (39.5 PEP) with an intermodulation product level of -27.8dBm

**Amp OIP3 (dBm)**            56  
**Amp P1dB (dBm)**         43  
**Duplexer Loss (dB)**        0.7  
**Carrier Level (dBm)**      21.4  
**Unit OIP3 (dBm)**         55.3  
**Unit P1dB (dBm)**         42.3  
**Pim max (dBm)**           -13    **Desired maximum intermod level**

Number of Carriers	PEP (dBm)	IM Att(dBc)	IM Level (dBm)	Pc max
2	27.4	67.8	-46.4	32.5
3	30.9	60.8	-39.4	30.2
4	33.4	56.6	-35.2	28.8
5	35.4	54.4	-33	28.1
6	37.0	52.4	-31	27.4
7	38.3	50.6	-29.2	26.8
8	39.5	49.2	-27.8	26.3

Similarly in the uplink we use a 1W amplifier with the ALC set at 29.5.5dBm, a maximum output per carrier of 20dBm (3 carriers).

Again the uplink calculations are included below.

**Amp OIP3 (dBm)**            44  
**Amp P1dB (dBm)**         30.4  
**Duplexer Loss (dB)**        0.7  
**Carrier Level (dBm)**      20  
**Unit OIP3 (dBm)**         43.3  
**Unit P1dB (dBm)**         29.7  
**Pim max (dBm)**           -13    **Desired maximum intermod level**

#Carriers	PEP (dBm)	IM Att(dBc)	IM Level(dBm)	Pc max
2	26.0	46.6	-26.6	24.5
3	29.5	39.6	-19.6	22.2

For 8 Carriers the power will be limited to 11.4dBm (29.5 PEP) with an intermodulation product level of -33.8dBm

**Amp OIP3 (dBm)** 44  
**Amp P1dB (dBm)** 30.4  
**Duplexer Loss (dB)** 0.7  
**Carrier Level (dBm)** 11.4  
**Unit OIP3 (dBm)** 43.3  
**Unit P1dB (dBm)** 29.7  
**Pim max (dBm)** -13

**Desired maximum intermod level**

#Carriers	PEP (dBm)	IM Att(dBc)	IM Level (dBm)	Pc max
2	17.4	63.8	-52.4	24.5
3	20.9	56.8	-45.4	22.2
4	23.4	52.6	-41.2	20.8
5	25.4	50.4	-39	20.1
6	27.0	48.4	-37	19.4
7	28.3	46.6	-35.2	18.8
8	29.5	45.2	-33.8	18.3

I hope this clarifies this outstanding issue. If you have any further questions or comments do not hesitate to contact me.

Yours faithfully

For and on behalf

Aerial Facilities Limited

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