Project	**IEEE 802.16 Broadband Wireless Access Working Group** **<http://ieee802.org/16>**
Title	**RRFM Submission to IEEE 802.16 TG4**
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Re:	This is a response to a IEEE 802.16.4 Task Group session 12 assignment.
Abstract	This document proposes a new RFMM message.
Purpose	This document forms a response to the requirement of updating the TG4 MAC strawman document.
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This section to be included in the Draft IEEE 802.16.4 MAC Standard.
Section and paragraph numbering to change as necessary.
All TBD's refer to Draft IEEE 802.16.4 Standard

Downlink Radio Frequency Management (DRFM) Message

A Radio Frequency Management Message shall be transmitted by the BS at a periodic interval (30 sec TBD) (Table XX TBD).The DRFM is a MAC Management Message of Type 28 (TBD). It begins with a Generic Downlink MAC header and its format is shown in Figure (XX TBD)

This message will characterize the Radio Frequency Emission properties of the BS, and other co-located emitters which can be other base stations or channels controlled by the single base station. The purpose of this message is to inform nearby and potentially interfering BS and SS of the radiation of the originating BS

Each emission from the BS is characterized by giving its channel frequency, EIRP, direction, and beamwidth, The following parameters will be included in a DRFM:

Base Station ID
The Base Station ID is a 64 bit long field identifying the BS. The Base Station ID may be programmable or derived from the configuration file used to set up Base Station parameters on installation and activation.

GPS Locator

GPS Location of the BS which can have up to 64 co-located radio emitters which can be either other base stations or a multiple of channels from a single base station. The GPS coordinates are loaded into the configuration file used to set up the Base Station parameters on installation and activation. The resolution of the GPS inputs are to 0.01 minute, and consist of signed latitude and longitudes. The GPS locator field is 7 bytes long and contains reserved bit fields.

Height of BS
The height of a BS in meters above ground level. This is a 10 bit long field allowing the indication of a maximum height of 1024 Meters.

Base Station Emitter Number
The number of distinct channel emissions that are emanating from the BS and its co-located base stations (having the same GPS locator). This is a 6 Bit long field that also defines the number of TLV Downlink Channel Emission (DCE) frames to be read.

Dowlink Channel Emission   (DCE) Frame
This is a TLV encoded frame that contains information on each emission's radiation characteristics. Up to N=64 emissions can be specified as originating from the location of single BS.

Each frame shall contain the frequency of the emission (4 bytes in multiples of Kilohertz); EIRP per emission (in signed units of Power Spectral Density dBm/MHz) 1 Byte; direction of emission with respect to Magnetic North in increments of 2 degrees covering 0-360 degrees azimuth (1 Byte); Beamwidth of emitting antenna in increments of 2 degrees covering 0-360 degrees beamwidth (1 Bytes); and 1 Byte reserved for future use. The DCE frames N={1 to X} will correspond to the emissions from the BS whose ID is given. Emissions from other co-located but independent base stations will be given in N={(X+1) to 64}.

Bit 0							8							Bit 15

EC	EKS		Rsvd		Length									
Connection Identifier														
HT=0	CSI	FC		FSN		CI	PDE	CPT			PSP	Rsvd		
HCS						MAC Management Message Type = 28 (TBD)								
Base Station ID Byte 1						Base Station ID Byte 2								
Base Station ID Byte 3						Base Station ID Byte 4								
Base Station ID Byte 5						Base Station ID Byte 6								
Base Station ID Byte 7						Base Station ID Byte 8								
LAT 0=N 1=S	Latitude Reading Degrees (0-90)					Latitude Reading Minutes (0-60)						Reserved		
Latitude Reading 1/100 Minute (0-100)						Reserved								
LNG 0=W 1=E	Longitude Reading Degrees (0-90)					Longitude Reading Minutes (0-60)						Reserved		
Longitude Reading 1/100 Minutes (1-100)						Height of BS in 1 meter Increments (0-1024) Bits 10-15								
Height of BSCont.Bits 0-3		Number of Base Station Emitters (N=1-64)				Reserved								
DCE Byte 1 Frequency of Emitter N=1						DCE Byte 2 Frequencyof Emitter N=1								
DCE Byte 3 Frequency of Emitter N=1						DCE Byte 4 Frequency of Emitter N=1								
Eirp 0= - 1= +	EIRP in dBm/MHz for Emitter N=1					Direction of Emitter N=1 in 2 degree steps 0-360 degrees with Magnetic North Ref={00000000}								
Beamwidth of Emitter N=1 in 2 degree steps 0-360 degrees						Reserved								
•						•								
•						•								
•						•								
DCE Byte 1 Frequency of Emitter N=64						DCE Byte 2 Frequencyof Emitter N=64								
DCE Byte 3 Frequency of Emitter N=64						DCE Byte 4 Frequency of Emitter N=64								
Eirp 0= - 1= +	EIRP in dBm/MHz for Emitter N=64					Direction of Emitter N=64 in 2 degree steps 0-360 degrees with Magnetic North Ref={00000000}								
Beamwidth of Emitter N=64 in 2 degree steps 0-360 degrees						Reserved								

Figure XX TBD Downlink Radio Frequency Management Message Format