

## REQUEST FOR SPECIAL TEMPORARY AUTHORITY

SES Americom, Inc. (“SES”), pursuant to Section 25.120 of the Commission’s rules, respectfully requests Special Temporary Authority (“STA”) for 30 days to operate an earth station in Ceiba, Puerto Rico (“Ceiba Earth Station”) in the conventional C-band. The Ceiba Earth Station will communicate with AMC-18 at 104.95° W.L., which is on the Commission’s Approved Space Station List for service to the U.S. market.<sup>1</sup> SES seeks a 30-day STA beginning no later than October 24, 2017.<sup>2</sup>

The Ceiba Earth Station will be integrated into a temporary system with other operators to help restore local wireless service in Puerto Rico. As discussed below, grant of the requested authority is in the public interest as it will allow SES to provide services that will benefit the population in Puerto Rico as it recovers from the recent hurricanes and rebuilds its telecommunications infrastructure.

### Public Interest Showing

In the aftermath of Hurricane Maria, Puerto Rico lost most of its wireless coverage across the island, leaving residents without cellphone service.<sup>3</sup> In recent reports, the Commission estimates that the vast majority of cell sites remain out of service.<sup>4</sup> SES subsidiary O3b is currently providing capacity to temporarily enable local wireless services.<sup>5</sup> Due to high demand for satellite services in the region, SES is deploying the Ceiba Earth Station to supplement these services. Grant of this STA request will serve the public interest because the Ceiba Earth Station will be used to bring local wireless networks in Puerto Rico online while the terrestrial infrastructure is being repaired.

### Earth Station Technical Parameters

A description of the antenna and the proposed operations is provided in Annex 1, and Annex 2 sets forth the technical characteristics of the VertexRSI lightweight 2.4 meter terminal that will be used. Annex 3 contains a temporary uplink coordination report from Comsearch.

### Conclusion

The requested STA will allow SES to help connect wireless services for the people of Puerto Rico as the local terrestrial networks are being repaired. Accordingly, and for good cause shown, SES respectfully requests that its STA be granted no later than October 24, 2017.

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<sup>1</sup> See Petition for Declaratory Ruling of SES Satellites (Gibraltar) Limited, Call Sign S2713, IBFS File No. SAT-PPL-20061006-00118, granted Dec. 7, 2006.

<sup>2</sup> Actual service will be provided from October 27<sup>th</sup> to November 7<sup>th</sup>. Given the urgent need to commence service immediately, SES respectfully submits that the circumstances justify grant of authority on less than three business days’ notice under Section 25.120(a).

<sup>3</sup> See Elizabeth Weise, *Puerto Rico is nearly entirely cut off from cellphone service, leading to low tech solutions*, (Sept. 28, 2017), <https://www.usatoday.com/story/tech/2017/09/28/puerto-rico-cell-phone-service-tmobile-att-hurricane/710775001/>.

<sup>4</sup> See, e.g., “Communications Status Report for Areas Impacted by Hurricane Maria,” (rel. Oct. 7, 2017), available at: [https://apps.fcc.gov/edocs\\_public/attachmatch/DOC-347131A1.pdf](https://apps.fcc.gov/edocs_public/attachmatch/DOC-347131A1.pdf).

<sup>5</sup> See Application of O3b Limited, IBFS File No. SES-STA-20171011-01135, granted Oct. 11 2017.

## ANNEX 1: Operational Parameters

### Site Details

**Contact Information:**

Jose Ayala  
Arnie Christianson

**Phone Number:**

818-213-5438  
202-478-7126

**Geographic Coordinates:**

Latitude: 18° 14' 24" N

Longitude: 65° 37' 48" W

**Site Elevation:**

12 meters AMSL

### Antenna Details

Antenna ID: Ceiba 2.4m  
Manufacture/Model: VertexRSI 2.4m SF Flyaway Antenna  
Antenna Size: 2.4 meters  
Antenna Gain Transmit: 42.0 dBi at 6.1 GHz  
Antenna Gain Receive: 38.2 dBi at 3.9 GHz  
Height Above Ground Level: 2 meters  
Height Above Sea Level: 12 meters  
Total Input Power at the Flange: 272 watts  
Total EIRP for the Carriers: 63.6 dBW

### Operational Details

Frequency (GHz)	Transmit/Receive	Polarization	Emission Designator	Max EIRP per Carrier (dBW)	Max EIRP Density per Carrier (dBw/4kHz)
3.7-4.2	R	Horizontal and Vertical	36MG7D	0.0	0.0
5.925-6.425	T	Horizontal and Vertical	36MG7D	63.6	0.6

**ANNEX 2 –Terminal Characteristics**

# Model 2.4m SF Flyaway Antenna

## *Flyaway Antennas*



*The Strength to Perform*

### Description

The VertexRSI lightweight 2.4-meter flyaway antenna is designed for worldwide transmit and receive operation in C, X and Ku-band. This portable antenna consists of a carbon fiber composite reflector and aluminum support structures. This results in a low-weight antenna with superior stiffness and high performance under wind loading conditions.

The unique shape and the accurate reflector surface provide exceptionally low sidelobe and cross-polarization performance well within INTELSAT and EUTELSAT requirements. Repeatability is maintained with precision registration of the nine reflector segments and the feed support structure. The complete antenna system, including a single feed, is packaged in nine robust portable cases.

### Features

- Carbon fiber reflector
  - Lightweight, precision surface and high stiffness
- Easy deployment
  - Two-person assembly, captive hardware, precision alignment
- INTELSAT type approved, EUTELSAT compliant
- High performance
  - Low sidelobes and high E.I.R.P. capability

### Options

- Finishes
  - Green, tan or per customer spec
- Feeds
  - Four-port, Co pol, CP/LP switchable, DBS, Ka-band
  - Motorized polarization
- Motorization
  - Az/EI motorized, tracking using pulse sensors or resolvers

## Technical Specifications

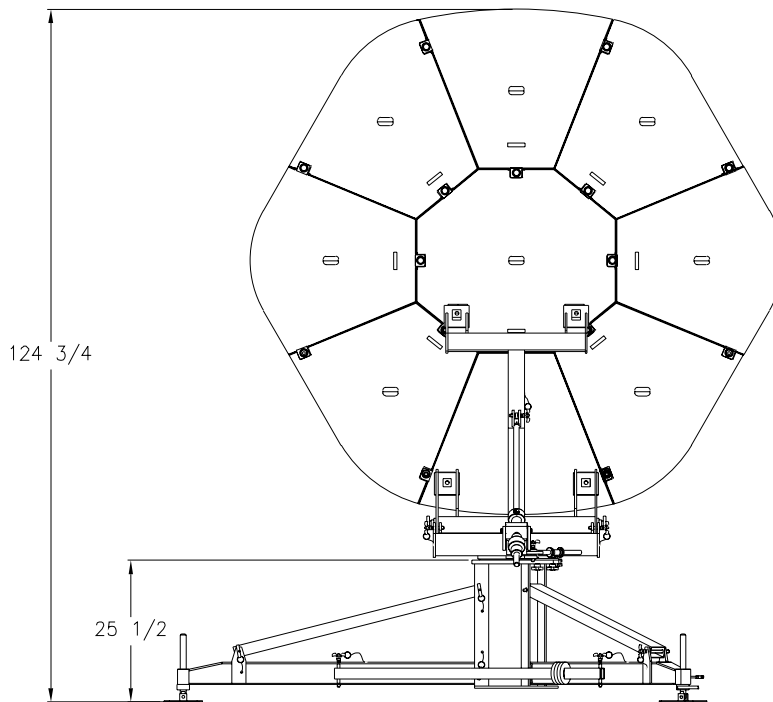
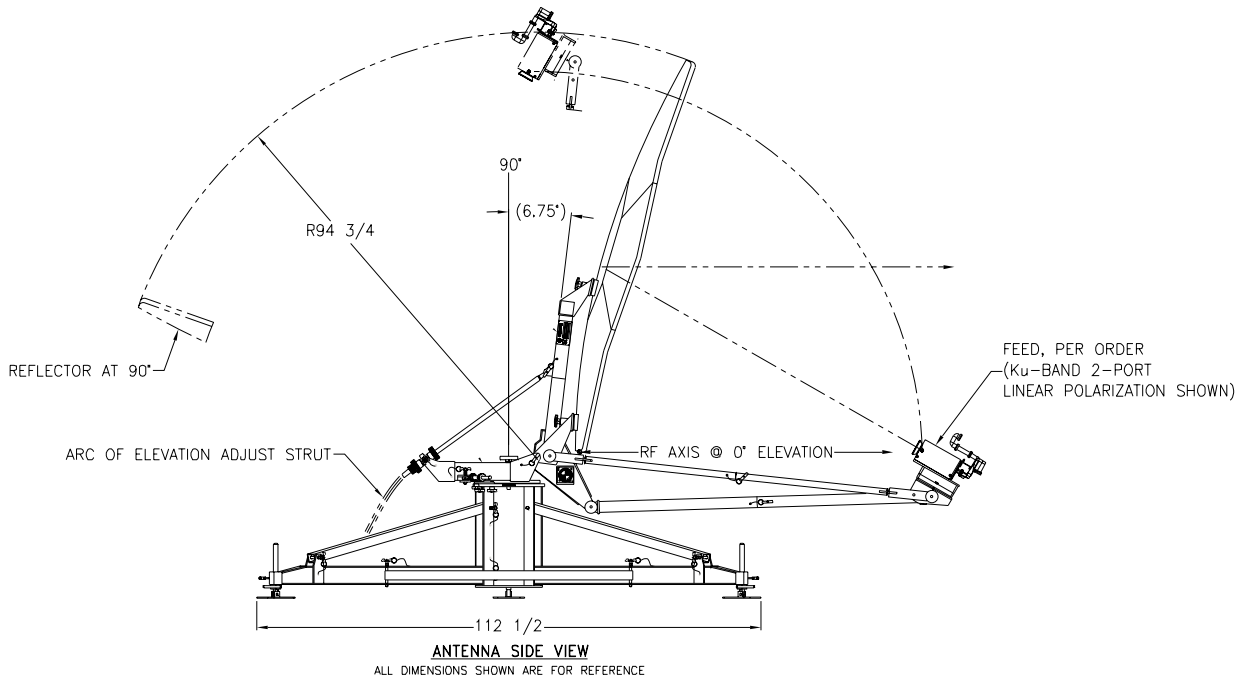
Mechanical				
Azimuth Travel		±360° coarse, ±15° fine adjustment		
Elevation Travel		0° - 90° with fine adjustment		
Polarization Travel		±95° (linear polarization), optional motorized polarization available		
Reflector Structure		Carbon fiber composite		
Pedestal Structure		Aluminum		
Shipping Specifications				
Case	Contents	Case size L x W x H	Component weight lbs. (kg)	Total weight (components and case) lbs. (kg)
1	Pedestal, Az Axis Strut	35" x 29" x 24"	57 (25.9)	107 (48.5)
2	T-Head, Feed Mounting Plate	39" x 36" x 12"	37 (16.8)	86 (39)
3	Outrigger, Feed Boom	60" x 20" x 12"	63 (28.6)	111 (50.4)
4	Outrigger, Feed Boom	60" x 20" x 12"	60 (27.2)	111 (50.4)
5	Reflector Panels 1, 2 and 6	39" x 36" x 12"	54 (24.5)	99 (44.9)
6	Reflector Panels 3, 4 and 5	39" x 36" x 12"	36 (16.3)	82 (37.2)
7	Reflector Panels 7, 8 and 9	39" x 36" x 12"	35 (15.9)	81 (36.7)
8	Upper and Lower Backspine	38" x 37" x 24"	46 (20.9)	122 (55.3)
	<i>Total System</i>	<i>8 Cases</i>	<i>388 (176)</i>	<i>799 (362.4)</i>
•	Ku-Band LP Feed (includes space for C-band LP feed)	34" x 28" x 24"	15 (6.8)	67 (30.4)
•	X-Band CP Feed	34" x 28" x 24"	34 (15.4)	89 (40.4)
•	C-Band CP Feed	34" x 28" x 24"	30 (13.6)	70 (31.8)
Finish (standard)		White reflector and gray (powdercoated) positioner assembly		

Environmental	
Wind Loading	
Operational (with ballast)	30 mph (48 km/h) gusting to 45 mph (73 km/h)
Survival (with tie-downs)	60 mph (97 km/h) gusting to 75 mph (121 km/h)
Pointing Loss	2 dB peak at Ku-band (Rx) with control system
Temperature	
Operational	-30° to +122° F (-34° to +50° C)
Survival	-40° to +140° F (-40° to +60° C)
Relative Humidity (operational and survival)	0% to 100%
Solar Radiation	360 BTU/h/ft <sup>2</sup> (1000 Kcal/h/m <sup>2</sup> )
Shock and vibration	As encountered during shipment by commercial air, sea or land
Corrosive Atmosphere	As encountered in coastal regions and/or heavily industrialized areas

# Model 2.4m SF Flyaway Antenna

Electrical	C-Band 2-Port Linear Polarized		C-Band 2-Port Circular Polarized		X-Band 2-Port Circular Polarized		Ku-Band 2-Port Linear Polarized		Ku-Band 4-Port Linear Polarized	
	Receive	Transmit	Receive	Transmit	Receive	Transmit	Receive	Transmit	Receive	Transmit
Frequency (GHz)	3.625 - 4.200	5.850 - 6.425	3.625 - 4.200	5.850 - 6.425	7.250 - 7.750	7.900 - 8.400	10.950 - 12.750	13.750 - 14.500	10.950 - 12.750	13.750 - 14.500
Antenna Gain at Midband	38.20 dBi	42.00 dBi	38.06 dBi	42.10 dBi	43.50 dBi	44.20 dBi	47.19 dBi	49.00 dBi	47.10 dBi	48.80 dBi
Antenna Noise Temperature										
5° Elevation	49 K		51 K		65 K		63 K		85 K	
10° Elevation	38 K		50 K		55 K		60 K		75 K	
20° Elevation	33 K		49 K		51 K		56 K		69 K	
40° Elevation	34 K		48 K		52 K		55 K		68 K	
Typical G/T at 4.0 and 7.5 GHz 20° Elevation, Clear Horizon										
C-Band 35° K LNA	19.5 dB/K									
X-Band 55° K LNA					23.2 dB/K					
Typical G/T at 4.0 and 10.95 GHz 10° Elevation, Clear Horizon										
C-Band 35° K LNA			18.8 dB/K							
C-Band 50° K LNA			18.1 dB/K							
Ku-Band 70° K LNA							25.4 dB/K			
Ku-Band 90° K LNA							24.7 dB/K			
Typical G/T at 11.85 GHz 20° Elevation, Clear Horizon										
Ku-Band 70° K LNA									25.7 dB/K	
Ku-Band 90° K LNA									25.1 dB/K	
Pattern Beamwidth (in degrees at midband)										
-3 dB Beamwidth	2.12	1.37	2.09	1.35	1.12	1.03	0.72	0.60	0.71	0.60
-15 dB Beamwidth	4.45	2.88	4.39	2.84	2.35	2.16	1.51	1.26	1.49	1.26
Sidelobe Performance										
For Angle A from 2° to 30° (typical)							24-25 Log A (Az plane) 29-25 Log A (in general)		24-25 Log A (Az plane) 29-25 Log A (in general)	
For Angle A beyond mainbeam to 20°		29-25 Log A		29-25 Log A		29-25 Log A				
For Angle A from 30° to 140°									-10 dBi	-10 dBi
For Angle A from 140° to 180°									0 dBi	0 dBi
Cross Polarization										
On Axis	30 dB	30 dB	19.7 dB	27.3 dB	21.3 dB	21.3 dB	35 dB	35 dB	35 dB	35 dB
Within 1.0 dB Beamwidth	28 dB	28 dB	19.7 dB	27.3 dB	21.3 dB	21.3 dB	27 dB	35 dB	27 dB	35 dB
VSWR	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1	1.35:1	1.25:1	1.35:1	1.30:1
Axial Ratio			1.81 dB	0.75 dB	1.50 dB	1.50 dB				
Port-to-Port Isolation										
Rx/Tx (Rx frequency)	0 dB	-30 dB	0 dB	-50 dB	0 dB	-110 dB	0 dB	-30 dB	0 dB	-50 dB
Tx/Rx (Tx frequency)	-60 dB	0 dB	-100 dB	0 dB	-110 dB	0 dB	-85 dB	0 dB	-85 dB	0 dB
Feed Insertion Loss	0.15 dB	0.15 dB	0.40 dB	0.20 dB	0.40 dB	0.40 dB	0.30 dB	0.20 dB	0.60 dB	0.45 dB
Output Waveguide Flange Interface	CPR-229G	CPR-137G	CPR-229G	CPR-137G	CPR-112G	CPR-112G	WR-75 Flat	WR-75 Flat	WR-75 Flat	WR-75 Flat
Total Power Handling Capability	2 kW CW		2 kW CW		2 kW CW		1 kW CW		2 kW CW	
RF Specification	975-2837		975-2712		975-1701		975-1575		975-1708	

# Model 2.4m SF Flyaway Antenna



## GENERAL DYNAMICS SATCOM Technologies

1104 Energy Drive • Kilgore, TX 75662 USA • Tel: (903) 984-7811 • Fax: (903) 984-7597 • Email: kilgore-sales@gdsatcom.com  
Website: www.gdsatcom.com 655-0016B, 02/09

## **ANNEX 3 – Temporary Uplink Coordination Report**





**COMSEARCH**<sup>®</sup>

A CommScope Company

October 20, 2017

Re: O3b Networks USA, LLC.  
ROOSEVELT ROADS, PR  
Temporary Transmit-Only Earth Station  
Operation Dates: 10/27/2017 - 11/27/2017  
Job Number: 171020COMSGE01

Dear Frequency Coordinator:

On behalf of O3b Networks USA, LLC., we are forwarding the attached coordination data for a Temporary Transmit-Only Earth Station to be located at the site referenced above.

This earth station will transmit only on the satellite(s) and frequency or frequencies as described in the attached data. Please do not report cases involving 4 GHz facilities or problems involving non-active paths or frequencies outside the specified range.

If there are any questions concerning this coordination notice, please contact Comsearch.

Sincerely,

COMSEARCH

Gary K. Edwards  
Senior Manager  
gedwards@comsearch.com

Enclosure(s)

Date: 10/20/2017  
Job Number: 171020COMSGE01

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**Administrative Information**

Status: TEMPORARY (Operation from 10/27/2017 to 11/27/2017)  
Call Sign: TEMP11  
Licensee Code: O3BNET  
Licensee Name: O3b Networks USA, LLC.

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**Site Information****ROOSEVELT ROADS, PR**

Venue Name  
Latitude (NAD 83): 18° 14' 24.0" N  
Longitude (NAD 83): 65° 37' 48.0" W  
Climate Zone: B  
Rain Zone: 1  
Ground Elevation (AMSL): 7.5 m / 24.6 ft

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**Link Information**

Satellite Type: Geostationary  
Mode: TO - Transmit-Only  
Modulation: Digital  
Satellite Arc: 104° W to 105° West Longitude  
Azimuth Range: 248.4° to 249.1°  
Corresponding Elevation Angles: 41.6° / 40.7°  
Antenna Centerline (AGL): 3.66 m / 12.0 ft

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**Antenna Information****Transmit - FCC32**

Manufacturer: Vertex/RSI  
Model: 2.4m SF Flyaway  
Gain / Diameter: 42.0 dBi / 2.4 m  
3-dB / 15-dB Beamwidth: 1.00° / 2.00°

Max Available RF Power (dBW/4 kHz): -17.9  
(dBW/MHz): 6.1

Maximum EIRP (dBW/4 kHz): 24.1  
(dBW/MHz): 48.1

Interference Objectives: Long Term: -154.0 dBW/4 kHz 20%  
Short Term: -131.0 dBW/4 kHz 0.0025%

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**Frequency Information****Transmit 6.1 GHz**

Emission / Frequency Range (MHz): 36M0G7W / 5925.0 - 6005.0  
36M0G7W / 6185.0 - 6425.0

Max Great Circle Coordination Distance: 131.9 km / 82.0 mi  
Precipitation Scatter Contour Radius: 100.0 km / 62.1 mi

<b>Coordination Values</b>	<b>ROOSEVELT RD, PR</b>	
Licensee Name	O3b Networks USA, LLC.	
Latitude (NAD 83)	18° 14' 24.0" N	
Longitude (NAD 83)	65° 37' 48.0" W	
Ground Elevation (AMSL)	7.5 m / 24.6 ft	
Antenna Centerline (AGL)	3.66 m / 12.0 ft	
Antenna Model	Vertex/RSI 2.4 meter	
Antenna Mode	Transmit 6.1 GHz	
Interference Objectives: Long Term	-154.0 dBW/4 kHz	20%
Short Term	-131.0 dBW/4 kHz	0.0025%
Max Available RF Power	-17.9 (dBW/4 kHz)	

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
0	0.27	105.75	-10.00	125.05
5	0.00	109.34	-10.00	131.90
10	0.00	112.92	-10.00	131.90
15	0.00	116.40	-10.00	131.90
20	0.00	119.73	-10.00	131.90
25	0.00	122.87	-10.00	131.90
30	0.00	125.84	-10.00	131.90
35	0.00	128.59	-10.00	131.90
40	0.00	131.09	-10.00	131.90
45	0.00	133.29	-10.00	131.90
50	0.00	135.16	-10.00	131.90
55	0.00	136.63	-10.00	131.90
60	0.00	137.67	-10.00	131.90
65	0.00	138.25	-10.00	131.90
70	0.00	138.34	-10.00	131.90
75	0.00	137.94	-10.00	131.90
80	0.37	137.42	-10.00	115.66
85	0.90	136.57	-10.00	100.00
90	1.22	135.08	-10.00	100.00
95	1.22	132.92	-10.00	100.00
100	1.16	130.40	-10.00	100.00
105	1.16	127.66	-10.00	100.00
110	1.08	124.64	-10.00	100.00
115	1.47	121.69	-10.00	100.00
120	1.04	118.16	-10.00	100.00
125	1.04	114.73	-10.00	100.00
130	1.04	111.19	-10.00	100.00
135	0.43	107.41	-10.00	112.61
140	0.00	103.67	-10.00	131.90
145	0.00	99.99	-10.00	131.90
150	0.00	96.29	-10.00	131.90
155	0.00	92.56	-10.00	131.90
160	0.00	88.82	-10.00	131.90
165	0.00	85.09	-10.00	131.90
170	0.00	81.38	-10.00	131.90
175	0.00	77.69	-10.00	131.90
180	0.00	74.05	-10.00	131.90
185	0.00	70.47	-10.00	131.90

<b>Coordination Values</b>	<b>ROOSEVELT RD, PR</b>	
Licensee Name	O3b Networks USA, LLC.	
Latitude (NAD 83)	18° 14' 24.0" N	
Longitude (NAD 83)	65° 37' 48.0" W	
Ground Elevation (AMSL)	7.5 m / 24.6 ft	
Antenna Centerline (AGL)	3.66 m / 12.0 ft	
Antenna Model	Vertex/RSI 2.4 meter	
Antenna Mode	Transmit 6.1 GHz	
Interference Objectives: Long Term	-154.0 dBW/4 kHz	20%
Short Term	-131.0 dBW/4 kHz	0.0025%
Max Available RF Power	-17.9 (dBW/4 kHz)	

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Transmit 6.1 GHz	
			Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	66.96	-10.00	131.90
195	0.00	63.56	-10.00	131.90
200	0.00	60.23	-10.00	131.90
205	0.21	56.88	-10.00	131.17
210	0.90	53.38	-10.00	100.00
215	0.58	50.69	-10.00	103.33
220	1.12	47.64	-9.95	100.00
225	1.88	44.64	-9.24	100.00
230	2.23	42.25	-8.65	100.00
235	1.89	40.87	-8.29	100.00
240	1.89	39.65	-7.96	100.00
245	2.27	38.57	-7.66	100.00
250	1.92	38.74	-7.70	100.00
255	1.64	39.39	-7.88	100.00
260	2.24	39.70	-7.97	100.00
265	2.51	40.85	-8.28	100.00
270	3.17	42.15	-8.62	100.00
275	3.21	44.41	-9.19	100.00
280	2.63	47.46	-9.91	100.00
285	3.07	50.05	-10.00	100.00
290	2.64	53.44	-10.00	100.00
295	2.30	56.92	-10.00	100.00
300	2.69	60.17	-10.00	100.00
305	2.40	63.87	-10.00	100.00
310	2.05	67.65	-10.00	100.00
315	2.58	71.23	-10.00	100.00
320	1.64	75.26	-10.00	100.00
325	1.04	79.17	-10.00	100.00
330	1.11	82.98	-10.00	100.00
335	0.84	86.84	-10.00	100.00
340	0.49	90.67	-10.00	107.96
345	0.87	94.52	-10.00	100.00
350	0.48	98.29	-10.00	108.80
355	0.34	102.04	-10.00	118.57