AX.25 Header (16 bytes)				AX.25 Data Field (159 or 48 bytes)	
Source Callsign (7)	Callsign Destination (7)	Control Field (1)	PID (1)	CSP Header (4)	CSP Packet (155, 44)

	Data Structure
Beacon (Full: 155 bytes, Simple: 44 bytes)	Payload

- **Downlink Frequency: 436.650 MHz**

- **Modulation: GMSK**

- **Data Rate: 9600 bps**

- **Protocols: AX.25 and CSP (CubeSat Space Protocol)**

- **Beacon Types: Simple Beacon (44 bytes), Full Beacon (155 bytes)**

- **Beacon Interval: Simple Beacon (10 s), Full Beacon (30 s)**

- **The data structure for each beacon type is defined as follows:**

- **Email: accman9244@gmail.com, johyewon102@gmail.com**

Full Beacon

	Data	Type		Qty	byte	bit	Note
ID1	Satellite Name	char	1	4	4	32	"SPI>"
Version	Firmware Version	uint8_t	1	1	1	8	"2" (Launch Base: 25.11.27)
Time	UTC time	uint8_t	1	6	6	48	"year/month/day hour:min:sec"
Position & Velocity	Position Flag	uint8_t	1	1	1	8	"0":TLE (ECI-frame) or "1":GPS (ECEF-frame) or "255":not used
	Position	float	4	3	12	96	"X,Y,Z"
	Velocity	float	4	3	12	96	"X,Y,Z"
EPS	Battery Mode	uint8_t	1	1	1	8	"0":initial or "1":undervoltage or "2":safemode or "3":norminal or "4":full
	Battery Voltage [mV]	uint16_t	2	1	2	16	
	Battery Output Current [mA]	uint16_t	2	1	2	16	
	Power Switch Status	uint8_t	1	1	1	8	"-, -, RP, Cameras, LEO Nav, S-band Knif, GPS Receiver, UHF Transiver"
	Power Switch Current [mA]	uint16_t	2	6	12	96	[mA] "H1-47, H1-49, H1-51, H1-48, H1-50, H1-52" "UHF Transiver, GPS Receiver, S-band Knif, LEO Nav, Cameras, RP"
	Solar Panel Input Voltage [mV]	uint16_t	2	3	6	48	"+X and –X surface, +Y and –Y surface, –Z surface"
	Solar Panel Input Current [mA]	uint16_t	2	3	6	48	"+X and –X surface, +Y and –Y surface, –Z surface"
ADCS	Estimated Attitude (Quaternion)	float	4	4	16	128	"q0, q1, q2, q3"
	Estimated Gyro Bias	float	4	3	12	96	"roll, pitch, yaw"
	Estimated Angular Rate	float	4	3	12	96	"roll, pitch, yaw"
	Measured Angular Rate	float	4	3	12	96	"roll, pitch, yaw"
	Sun/Eclipse Status	uint8_t	1	1	1	8	"-, -, -, -, -, -, -, sun(1)/eclipse(0)"
Mode Flag	Operational Mode	uint8_t	1	1	1	8	"0":init-mode / "1":standby-mode / "2":Technical mission-mode / "3":Scientific mission-mode / "4":Communication-mode / "5":Safety-mode / "6":Sleep-mode / "7":S-band deploy mode
	Mode Elapsed Time	uint32_t	4	1	4	32	"sec"
Temperature	(not used)	int8_t	1	5	5	40	"+X,+Y,-X,-Y,-Z"
	OBC	int8_t	1	2	2	16	
	EPS	int8_t	1	6	6	48	"P31U_1 ,P31U_2 ,P31U_3 ,P31U_4, BP4_1, BP4_2"
	UHF	int8_t	1	2	2	16	"AX100_brd, AX100 pa"
Deploy Flag	Deploy Status	uint8_t	1	1	1	8	"-, -, -, -, -, -, S-band antenna, UHF antenna"
	UHF Deploy Attempts	uint8_t	1	1	1	8	""
	S-band Deploy Attempts	uint8_t	1	1	1	8	
Comm Status	Total TX Data Volume	uint32_t	4	1	4	32	AX100 Number of tx bytes (total)
	Total RX Data Volume	uint32_t	4	1	4	32	AX100 Number of rx bytes (total)
ID2*	Satellite Name	char	1	5	5	40	"<RONE"
Total Data					155	1240	

Simple Beacon

	Data	Type		Qty	byte	bit	Note
ID1	Satellite Name	char	1	4	4	32	"SPI>"
Version	Firmware Version	uint8_t	1	1	1	8	"7"
Time	UTC time	uint8_t	1	6	6	48	"year/month/day hour:min:sec"
Position & Velocity	Position Flag	uint8_t	1	1	1	8	"0":TLE (ECI-frame) or "1":GPS (ECEF-frame) or "255":not used
	Position	int	4	3	12	96	"X,Y,Z"
	Velocity	int	4	3	12	96	"X,Y,Z"
EPS	Battery Mode	uint8_t	1	1	1	8	"0":initial or "1":undervoltage or "2":safemode or "3":norminal or "4":full
	Battery Voltage [mV]	uint16_t	2	1	2	16	
ID2*	Satellite Name	char	1	5	5	40	"<RONE"
Total Data					44	352	